

ED 024 772

VT 004 967

Health Education of Workers. Publication 1279.

Public Health Service (DHEW), Washington, D.C. Div. of Occupational Health.

Pub Date Mar 65

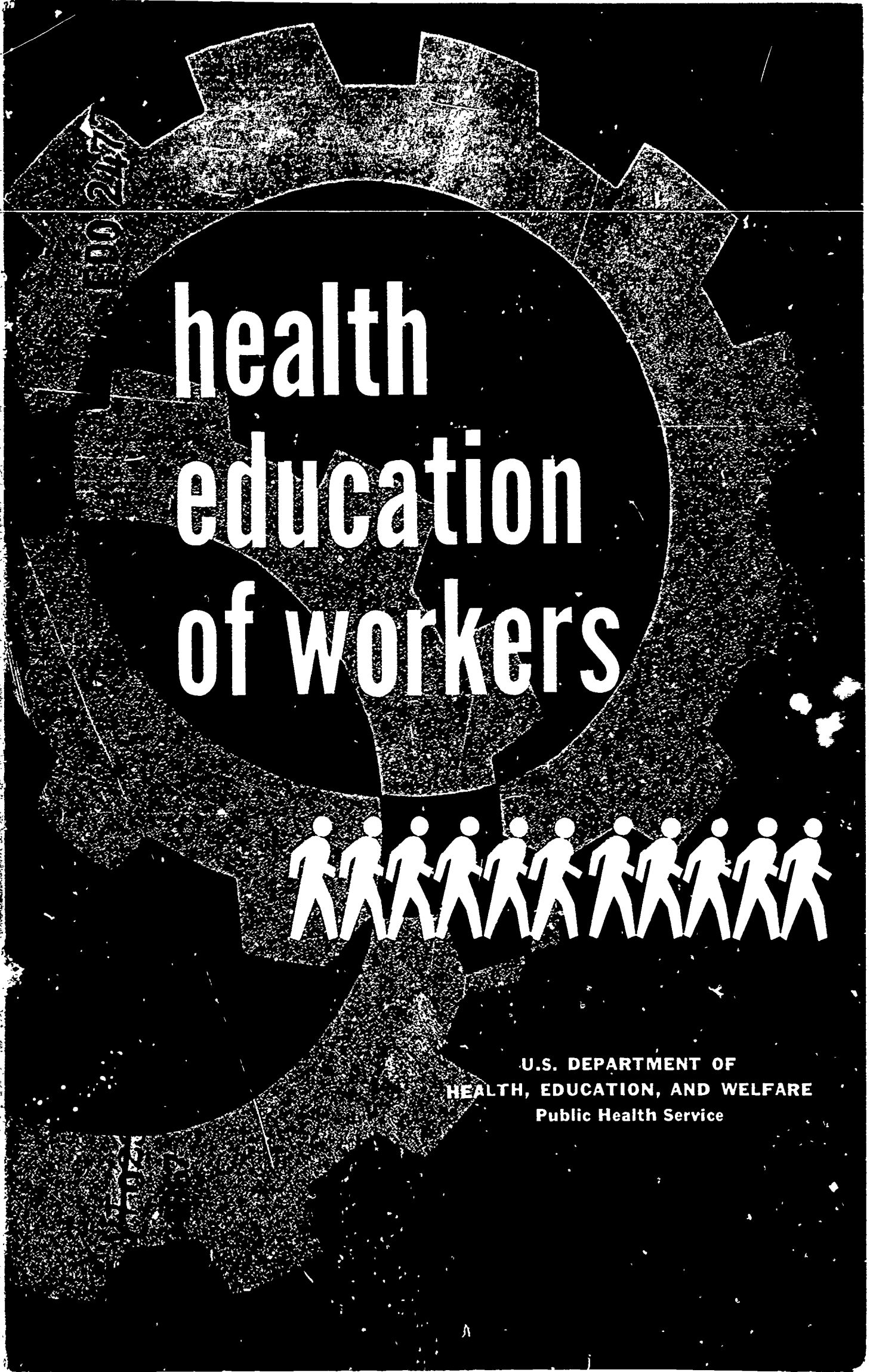
Note- 101p.

Available from- The Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (\$0.35).

EDRS Price MF-\$0.50 HC-\$5.15

Descriptors- \*Health Education, Health Programs, \*Health Services, \*Industrial Personnel, Industrial Training, \*Program Development, Research Reviews (Publications), Work Environment

As a ready reference for information on health education programs for employees, this monograph brings together four comprehensive review articles which have appeared in the literature and seven abstracts of studies and demonstrations. The articles are: "Health Education in the Occupational Setting," "Health Education in Industry," "Health Education of the Worker," and "Health Education Applied to Management and Labor Unions." Abstracts are titled: (1) "Five Studies in Industrial Health Education" undertaken by the Harvard School of Public Health, (2) "Pilot Industrial Health Services Survey" by the Division of Industrial Hygiene, Los Angeles County Health Department, (3) "Newburgh Health Education Demonstration" by the National Tuberculosis Association, (4) "Gibson County Industry Experiments with Health Education" by the Rutherford Garment Company assisted by the Gibson County Department of Public Health in Rutherford, Tennessee, (5) "Health Education in Industry --A Pilot Study" by the Industrial Council of Greater Atlanta, Inc., and the Georgia Department of Public Health, (6) "A Step in the Right Direction" by the Tuberculosis and Health Society of Wayne County, Detroit, (7) "Special Report --Research on Health Education in Industry" by the American Medical Association. (JK)



# health education of workers



U.S. DEPARTMENT OF  
HEALTH, EDUCATION, AND WELFARE  
Public Health Service

**U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE  
OFFICE OF EDUCATION**

**THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE  
PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS  
STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION  
POSITION OR POLICY.**

**/HEALTH EDUCATION  
OF WORKERS**

**U.S. DEPARTMENT OF HEALTH, EDUCATION, AND  
WELFARE**

**Public Health Service**

**Division of Occupational Health**

**Public Health Service Publication No. 1279**  
**March 1965**

**U.S. GOVERNMENT PRINTING OFFICE**  
**WASHINGTON : 1965**

---

**For sale by the Superintendent of Documents, U.S. Government Printing Office**  
**Washington, D.C., 20402 - Price 35 cents**

## **PREFACE**

THE GAINFULLY EMPLOYED person in our society occupies a dual position in the health education scheme. In his role as a worker, he finds himself the target of efforts to increase his awareness and understanding of occupational health hazards peculiar to his job and to motivate him to use the safeguards provided by the employer. As an adult member of his community, susceptible to the illnesses and disabilities of the general population, he is subject to efforts directed at improving his general health practices to raise his level of wellness.

Because of the legal compulsion of workmen's compensation laws, primary concern in American industry in the early 1900's centered on diseases of the work environment. The need to control toxic substances and processes was paramount. Gradually, however, general health educational activities, together with other preventive health services, were superimposed in those industrial and business establishments large enough to warrant medical or nursing staffs. Provision of such services has followed the recognition that 90 percent of sickness absenteeism among employees is due to nonoccupational causes.

Worker health education in this country thus has developed along two lines. The degree to which one or both elements of a worker health education program are carried out in a given workplace depends on various factors, including the hazardousness of the operation, the number of employees, and the availability of health personnel. The means by which such programs are carried out also vary widely, ranging from passive handouts of health pamphlets to dynamic counseling services. Some programs are based on preconceived notions, while others recognize the need for a proper educational diagnosis—determining the type of health education desired by a particular group. Coverage of workers is likewise spotty, employee health education programs being available mainly to workers in larger establishments.

As a ready reference to those who seek information on health education programs for employ<sup>ees</sup>, this monograph brings together several comprehensive review articles which have appeared in the literature in the past several years. These articles served as useful working papers for the study group on health education of industrial and other workers at the Fifth International Conference on Health and Health Education, held in 1962 in Philadelphia. Because it is felt that these materials should be made available to a broader audience, they are reproduced here, together with abstracts of reports on studies and demonstrations, and other pertinent papers presented at the conference.

We are grateful to the authors and study directors who have given us permission to reproduce their material.

## **CONTENTS**

	Page
PREFACE . . . . .	iii
PART ONE—REVIEW ARTICLES	
Health Education in the Occupational Setting, from <i>The Health of People Who Work</i> . . . . .	1
Health Education in Industry, Dr. A. L. Bravo . . . . .	16
Health Education of the Worker, J. S. Felton, M.D . . . . .	30
Health Education Applied to Management and Labor Unions, W. A. Sawyer, M.D . . . . .	63
PART TWO—STUDIES AND DEMONSTRATIONS	
1. Harvard School of Public Health: Five Studies in Industrial Health Education . . . . .	71
2. Pilot Industrial Health Services Survey, Los Angeles . . . . .	85
3. Newburgh Health Education Demonstration, Na- tional Tuberculosis Association . . . . .	86
4. Gibson County Industry Experiments with Health Education, Tennessee . . . . .	88
5. Health Education in Industry—A Pilot Study, In- dustrial Health Council of Atlanta, Georgia . . . . .	89
6. A Step in the Right Direction, Tuberculosis and Health Society, Detroit . . . . .	90
7. Special Report—Research on Health Education in Industry . . . . .	91

# PART ONE

## REVIEW ARTICLES

### HEALTH EDUCATION IN THE OCCUPATIONAL SETTING

---

From *The Health of People Who Work*, Albert Q. Maisel (ed.). The National Health Council, New York, 1960, ch. 8, 145-157.

SINCE THE ULTIMATE goal of any industrial health program is the prevention of illnesses and injuries, the education of workers and supervisors in matters of health has always been an essential part of such programs—though often not explicitly recognized as such.

Every attempt to control the working environment, for example, involves not merely measures of safety and sanitation, but also the explanation of the purposes of these measures to the personnel affected by them, and the securing of their conscious and willing cooperation in the effort to achieve and preserve sanitation and safety.

In similar fashion, every attempt to prevent occupational illnesses—or to reduce their toll—is dependent, for full success, upon the cooperation of the working and supervising force, cooperation which can be won only when workers and supervisors understand the purpose of the procedure and its potential effect upon their well-being.

Much health education, of course, goes on in any industrial health program as an inevitable part of the relationship between doctors, nurses, and supervisors and the employees whose health is their concern. Often it occurs so naturally and casually that it is not even thought of as education by either the "educator" or the "pupil." But the full potentialities of an in-plant health program can be realized only when plant management and its health and safety staff plan their educational activities as part of their total health and safety effort.

Historically, the need for such planning was first recognized in the area of safety engineering. As early as the turn of the century, safety engineers discovered that they could make only limited progress in preventing work injuries if their efforts were focused solely upon the design and installation of safety devices. Despite such devices, men still fell from ladders, dropped objects on their toes, developed hernias from lifting weights in the wrong fashion, or cut themselves by misusing their tools. In each of these and countless other instances, the accidents they suffered were the result of unsafe acts rather than unsafe conditions. Thus, safety engineers found it essential to devote much attention to teaching safe working behavior to both workers and supervisors.

#### *Person-to-Person, Group, and Mass Approaches*

One effective approach, they soon discovered, was direct, person-to-person safety education, in which foremen and supervisors instructed the individual workers in the safety requirements of their particular jobs. In many plants, the inculcation of "safety awareness" was made a duty of the supervisors co-equal with their duties to maintain the quantity and quality of output. The following check-list, by which supervisors in one typical plant score themselves in the performance of their safety duties, provides a clear indication of the manner in which person-to-person safety training is carried on:

1. I accept safety as just as much a part of my job as production, quality, and cost.
2. I give adequate safety instruction to every new employee and to every old employee starting a new job.
3. I impart to all employees the understanding that the violation of standard safe work practices is just as serious as the violation of any other company rule.
4. I see that necessary personal protective equipment is provided.
5. I always set a good safety example myself.
6. By personal contact and group discussions, I make it possible for each employee to take part in the safety program.

7. I do not release new or relocated machines or equipment to an employee until I am satisfied that the necessary protective devices have been provided and the employees have received instructions regarding safe operation.
8. I investigate and determine the cause of all injuries, even the minor cases.
9. I am constantly watchful for, and I take immediate steps to correct, unsafe work conditions and unsafe work procedure.
10. I see that all injuries are reported and promptly treated.

To supplement direct safety instruction, numerous other devices have been developed to reach workers in groups. In hundreds of plants, employee safety committees have been found to be an effective means of enlisting participation in safety education and winning the cooperation of key employees whose example others respect and follow. Such safety committees serve as a two-way channel of communications; they bring to management's attention the experiences, complaints, and needs of the workers and they pass down to the work force an understanding and acceptance of the safety rules developed by management with the aid and advice of the safety committee.

Many companies have also used periodic safety meetings of the workers in a given department or area—or of those whose work involves some particular hazard or group of hazards—as a means of developing safety awareness. At every Du Pont construction project, for example, "tool-box meetings" of work crews are held for 15 minutes every Monday morning in the year.

To further supplement the educational efforts of supervisors, safety committees, and work-groups, broader mass programs of education have been widely adopted in the safety field. Many companies develop their own safety posters for use on bulletin boards and at time-clocks and other points where all workers will see them. Others use posters secured from the National Safety Council, the Red Cross, insurance companies, or other sources. Plant newspapers and employee magazines are frequently utilized to convey safety instruction. Award systems introducing an element of competition between departments or plants have been widely adopted. Safety instruction cards are often attached to

individual machines or posted near them. Instructions of a broader nature are conveyed through booklets on such topics as fire prevention, safety in materials handling, etc. Films on safety topics are often shown either at special meetings, or during lunch hours, in cafeterias and rest-rooms.

The effectiveness of such safety education—utilizing a combination of person-to-person, group, and mass techniques—has been conclusively demonstrated by the continuous decline in accident rates that has occurred over the years. In all industry, the death rate from work accidents has fallen from 43 per 100,000 per year in 1937 to 22 per 100,000 in 1958. The injury frequency rate has dropped from 31.87 per million work-hours in 1926 to only 6.17 per million work-hours in 1958.

Thanks in large measure to intensive safety education programs, many plants have, in fact, achieved complete freedom from all disabling industrial injury over periods extending over many months and even years. At the Poughkeepsie, New York, plant of the International Business Machines Corporation, for example, no disabling injury has been suffered in more than 17,600,000 man-hours of work. At the Greensboro, North Carolina, shops of the Western Electric Co., 19,463,000 man-hours of work have been performed without a disabling injury. The Convair plant, in San Diego, has a record of 21,814,000 man-hours of work without major injury. And the du Pont rayon plant, at Old Hickory, Tennessee, has had no disabling injuries in over twenty-nine million working hours.

The early successes of safety education led many large firms into the development of similar programs of health education in the hope of preventing illnesses, lowering insurance costs, reducing absenteeism, and fostering the well-being of their employees. All of these programs rely upon the same triad of educational techniques that have proved effective in safety education: person-to-person counseling, group teaching, and mass education.

#### *Counseling for Health by Nurses and Doctors*

Personal contacts, in fact, are potentially even more useful in education for health than in the safety field, because the job of teaching falls to professionals—the doctor and the nurse—who

are both qualified to advise on health problems and respected by the workers because of their education and professional status. Thus, in both large plants and small, individualized counseling has often been the mainstay of the health education effort.

Describing the health education program of the Standard Oil Company (New Jersey), Miss Sara Wagner—who serves that firm as Director of Nurses—pointed out to the participants in the National Health Forum that: "We have enjoyed our greatest success when we give counsel to individual employees based upon our records and direct observations of their health status. Almost all such advice is given verbally and only occasionally, when this is not possible, do we attempt to communicate with them in writing.

"Throughout his career in the company the average employee has many contacts with our health service. Every applicant for employment is, of course, given a pre-placement examination to determine whether his health will be compatible with his own safety on a given job and with the safety of others. Immediately following this examination, the physician informs the new employee, in lay language, of his observations and advises him as to steps that may be necessary to maintain or improve his health.

"Some time later, each employee is invited to return to the health service for a personal interview with one of the nurses. She reviews with him the observations that were made at the time of his placement examination. The nurse also obtains additional information from the employee regarding his general state of health, his work environment, his reactions to work and to the people with whom he works, and his home environment. Then, on the basis of these enlarged and updated data, she offers him whatever advice seems appropriate in view of her detailed knowledge of his problems.

"We also find many occasions for direct health education at our dispensaries, to which workers come voluntarily with complaints or minor injuries. In many instances, the nurses may find no need to do any counseling other than about the specific complaint that brings the patient into the dispensary. But, on many other occasions, the nature of the employee's problems, or his actions, suggest the desirability of extending the contact with the patient and directing the counseling effort into wider areas.

The girl who comes to the dispensary complaining of fatigue may, for example, require detailed advice on dieting and weight reduction.

"Such personalized health counseling is admittedly more expensive than other approaches to health education. But it has been our experience that it is not a wise economy to choose a relatively inexpensive medium for health education that is quite ineffective in preference to another which is not unreasonably costly and does offer appreciably greater effectiveness. We do not always succeed in personal counseling. But our success is more frequent and impressive than with any other media that we have used for health education.

"We must not assume," Miss Wagner continued, "that every nurse has counseling skills just because she is a graduate nurse. But, in our own program and in other well-integrated industrial medical departments, many nurses are encouraged to take courses in health counseling at the university. Others, who have gone on to get degrees in science or nursing, of course, have had additional training. In some industries, inservice training programs have built up the nursing forces' abilities in counseling. In our case, nurses have also benefited from the close contacts they have been able to maintain with our psychologist."

While individual health problems can often be solved most effectively by using person-to-person techniques, Dr. Marjorie Young, Assistant Professor of Health Education of the Harvard University School of Public Health, pointed out that: "Problems related to long-range goals of health protection, promotion, and conservation can frequently be more efficiently dealt with through health education directed to groups within the work force rather than to individuals. In our experimental studies, we have found that such group health education is most effective when it can be offered along with some kind of service: a tuberculosis X-ray, a tuberculin test, a polio shot, a flu shot, a blood test, or a test for diabetes."

#### *Securing Effective Aid From Voluntary Health Agencies*

Such programs, linked to services, are usually carried out in cooperation with voluntary agencies interested in the control of

a particular disease or group of diseases. Both industrial medical departments and voluntary health agencies have, in recent years, felt an increasing need to coordinate their planning and to adapt their programs to the special conditions found in industrial plants and the special interests of industrial workers.

Discussing one such effort toward more effective cooperation between voluntary agencies and industry, Miss Marie Goulett, Executive Director of the Health Association of Rochester and Monroe County, New York, explained: "Voluntary agencies have been able to bridge the gap between the community and industry because industry regards them as impartial groups devoted to raising the level of health in the entire community. Furthermore, most industrial firms have financially supported our general programs and management people have often served on our governing boards or on various of our committees. Thus industry has generally been willing to welcome most contributions to in-plant health education which we have proposed.

"In Rochester, we have done a great deal of health education in industry, over many years and in varied ways. Our Tuberculosis Association was one of the first in the field with its early posters discouraging spitting, showing people who sneeze how many feet the unguarded sneeze may carry, or urging the washing of hands. Later, when it offered chest X-rays, its mobile units and its booklets, posters, and other materials were widely welcomed by local industries. Other agencies, likewise, have received much cooperation from industry in the distribution of their educational materials. With the gradual increase in the volume of such material, however, it became necessary for our agencies to re-examine our programs and see whether we could not better adapt them to the needs and interests of both the plants and their workers and thus get them a wider and quicker acceptance.

"We, therefore, formed a small committee of industrial house organ editors and industrial doctors and nurses and, after prolonged discussion, they concluded that, in place of many of our beautifully printed pamphlets, a new type of information material might be more effective. This committee has since produced an extensive series of mimeographed leaflets on colored mimeograph paper. Each deals with a subject that the workers in the plants have asked for. Each uses simple, everyday language.

"Some of us, long accustomed to a more dignified approach, were horrified—at first—by the titles and wording of these leaflets. But they have been very well accepted by the workers to whom they are directed.

"Here, for example, is a leaflet about how to treat insect bites. Its title is, 'Is the Bite on You?' Here's another, entitled, 'Why Get into a Tizzy about Asian Flu?' This one, with a picture of a donkey, says, 'Don't Balk—Get Your Salk.' One, on the subject of choosing the right kind of shoes, is headlined, 'I got a shoe—You got a shoe—All God's children got shoes.'

"The text of all of these leaflets followed the same pattern, using language as people speak it rather than more dignified, more scientific, but less acceptable phrasing. Posters, designed in the same spirit, have been prepared for plant bulletin boards. Articles, developed for house organs by the committee, also closely follow the picture, headline, and text pattern of the leaflets.

"Now, when the seasonal moment arrives for a campaign on any given topic, we send out a sample of the pamphlet to the management of each plant in Rochester together with a return postcard so that they can tell us exactly how many pamphlets and posters they want. And, despite the misgivings of some of us, these postcards tell the story. Over the three years that our committee has been developing this kind of material, keyed to the requests of the workers themselves, our orders have been constantly increasing. Where many of the more formal, elaborate, and much more expensive booklets and brochures, which our agencies once provided, ended up in wastebaskets, these pamphlets are being read and taken home and read again. They really affect the people they are intended to reach."

Another effort to coordinate the educational activities of voluntary and community agencies with those of in-plant health services was described by Wayne Messick, Health Educator for the Adams County Health Department, Illinois. "In our community," Mr. Messick explained, "we have a committee of representatives of the unions, the Industrial Association, the Personnel Club, the Management Club, and the major official voluntary health agencies. This committee has acted as a clearing-house for health education programs. Because of its broad and influen-

tial membership, once it clears a program, it is virtually insured of acceptance at all levels in our local industries.

"For example, we made a study following a chest X-ray program that was offered both through industry and to the general community. In the community at large, 51 percent of the people took advantage of the offer. But in our plants—where our committee had devised an educational program that had gotten down to the grass-roots level—the X-ray offer drew a 91-percent response from the workers and, when industry extended the offer to adult members of the workers' families, a 72-percent response resulted from workers' wives.

"Again, in a diabetes detection drive, the response was 27 percent in the general community. But, among the families of industrial workers—who had been motivated to respond by health education conducted through the plants—33 percent took advantage of the opportunity to be tested.

"Such experiences have convinced us—in both industry and the official and voluntary organizations in our area—that our efforts at coordinated work have paid off. Our agencies have learned how to adapt their programs to industry's needs and facilities. And the result shows up in the greater response they are getting, today, from the workers in industry."

Still another attempt to coordinate the activities of voluntary health agencies and plant medical services in the area of health education was described by Neil C. Bertram, Industrial Health Educator of the Tuberculosis and Health Society of Wayne County, Michigan. "In Detroit," Mr. Bertram explained, "industrial workers comprise the major segment of the city's population. Thus, our Tuberculosis Society and numerous other voluntary agencies are naturally interested in improving industrial health programs and in bringing effective health education to the workers in Detroit's industries. We've gone about it through a pilot program in which 14 community health agencies and 14 industrial companies are cooperating. The latter form a cross section of industry, including a laundry, a brewing plant, and a chemical company as well as a number of manufacturing plants.

"Each month, one of the health agencies is given a month's 'visibility' in each of the cooperating plants. During that period it provides booklets, leaflets, pamphlets, movies, speakers,

health counseling—just as much as it can offer and the individual plants can utilize.

“The industries we are serving have deliberately been chosen for their relatively small size—from one hundred to six hundred employees—and because they do not have full-time health services. In other words, these are the types of plants where—ordinarily—management would conduct little planned health education and where voluntary agencies would—ordinarily—have little or no opportunity to reach the workers.

“To get our initial offer printed—our brochure entitled, ‘Yours for the Asking’—each of our 14 cooperating agencies contributed twenty dollars. In the short time we have been operating, we are getting a large measure of cooperation from the plant personnel people and from their health and safety committees, where these exist. We, in the voluntary agencies, have already learned a lot. Some agencies have found that their literature was not beamed for acceptance by factory employees and are now preparing new material. We’ve found that we can’t always get small plants to show a film on company time, that some will only accept bulletin board posters and pamphlets. Our hope, of course, is that—through this one-year pilot plan—our voluntary agencies will learn how to work more effectively with industry, and our industrial firms—particularly our smaller ones—will also learn how best to utilize our services.”

Discussing cooperation with voluntary agencies from the viewpoint of the industrial nurse, Mrs. Mary Delehanty, Senior Nurse of the Equitable Life Assurance Society of the United States, said: “I have been struck by the fact that—in discussions about the teamwork necessary for health education through industry—there has been little if any mention of the industrial nurse. Yet, any agency that wants to reach employees with its material would do well to enlist the cooperation of the nurse and the industrial physician. Only they, on the firing line of industrial medicine, can help management to understand fully how much can be achieved with such educational aids and what management’s responsibility actually is in cooperating with voluntary agencies.

“The workers have developed confidence in the nurse and the doctor; they come to them with their problems and they are

willing to take their advice. I think this has been thoroughly proven with the Salk vaccine. Industry played a tremendous role in speeding its adoption and it did so largely because industrial nurses and physicians have been able to reach the employees and help them to understand the importance of Salk inoculations for themselves and their families.

"The setting of education in industry is not essentially different from that in the community at large. The workers come to us with one problem—a headache or a work injury—and we are able to help them with that and, often, with something else as well. We have their attention and, when we're good at our jobs, their respect. And thus, very often, we can promote good programs more effectively than they can be pushed by health educators who have to work in the community at large, where interest, confidence, and respect cannot always be commanded.

"As to who should do the actual work of health education in industry, I feel that it is primarily the job of the medical department. Personnel men may try it but they are not successful in many instances because the worker knows that they haven't the health background or medical background that would help them to really understand programs. Management must be interested, of course. But again, it is the medical department that can help management understand the reasons for health education and win management's financial and moral support."

#### *Cooperation Between Medical and Other Departments in Health Education*

How much can be accomplished when close cooperation is effected between voluntary agencies and an in-plant medical department, and between the plant medical personnel and other key departments within an industry, has been demonstrated, recently, in the experience of the Chicago department store, Carson, Pirie, Scott & Company, as described by the National Health Forum by Mrs. Beatrice Hooper, the company's Charge Nurse, and Mrs. Sigrid Sittig, its Director of Training. "About 3 years ago," Mrs. Hooper explained, "there was a dramatic, rather abrupt change in the philosophy and practice of our medical department. From the old limiting concept that our

duties should be confined to first aid and clinical treatment, we began to put increasing emphasis on health maintenance, health counseling, cooperation with the employees' families and with the community agencies, and health and safety education.

"As is true in many industrial organizations, many employees had ignored the medical department. About 20 percent had taken advantage of everything the medical department had to give them. A great number had neglected themselves altogether. A large percentage of our worker associates did not even have a family physician.

"Those of us who worked through those months of changing philosophy realized that many employees had very great difficulty understanding or appreciating the new aspects of our program. A few of our employees were actually belligerent. It took much tact and patience to explain the need for each person to have a family doctor to go to who could give continuing care to them and to their families.

"Nurses in occupational health have always been teachers. Each dressing or treatment administered is a teaching situation and a good nurse takes the time to explain the why of each procedure. But at Carson, Pirie, Scott & Company, we knew that we had to do more than this. We had to do something dramatic to start our employees thinking positively about health. We wanted to reach many people quickly through a subject close to their hearts. Health education and health maintenance were just words. We had to convert them into a living, helpful tool which would stimulate a desire to keep healthy.

"Now, we are fortunate. There is frequent, easy communication between the training director, the insurance administrator, and the medical department. A specific idea was born during a consultation between the nurse and our insurance administrator, Miss Gloria Lee. According to our records, a large number of employees were being treated for cancer of many kinds. For many, the treatment had not come in time. True, we have many employees in the middle and older age groups where we could expect to find many kinds of cancer. But, many were young and realized too late that they had waited too long to get help and advice, because of fear or ignorance.

"Here was our place to start with health education. Several buzz sessions followed between the nurse and doctor, between the nurse and the training director, and finally between the nurse and the American Cancer Society. Then things began to happen. Miss Audrey Campbell, the representative of the American Cancer Society, suggested that, since four out of five of our employees were women, we start with something devised especially for them.

"She described the film, called 'Time and Two Women,' which deals with the problem of cancer of the uterus, women's second most deadly cancer foe. The film shows very clearly the technique used for cell examination and the taking of a tissue specimen for a biopsy. A discussion of cancer of the uterus requires extreme delicacy. To be valid it must be clearly presented. This film is scientifically accurate but presented with dignity and good taste.

"Miss Campbell also suggested the use of two pieces of literature. The first was, 'If you only knew! Women need not die of uterine cancer,' and the second, the pamphlet, 'Breast Self-Examination.' We decided we could hand these out to the women as they entered the room. The use of the film and free literature are a service of the American Cancer Society.

"Now, what about management? Fortunately, our top management is an enlightened, forward-looking group. We were actually urged—and I want to say this again—urged to show it on company time from nine to nine-thirty on four successive mornings of a week when most would be able to attend. A different member of management acted as a host each day. He introduced the doctor who made a short talk and also answered questions at the end of the film.

"The key question, however, was would the women come? Here Mrs. Sittig, head of the Training Department, took over. She decided on September 30, Tuesday, and then the first few days of October. Then she set the machinery in motion.

"In order to hold a meeting of a large number of our associates, we have to use our tearoom. The maintenance department sent a crew in to take the tables out of the way and to get them back in time for the customers in the tearoom.

"Our next problem was how to communicate with the women associates of the company. Now, the subject of cancer isn't

something that you bring up casually or as a matter of course in the business day. Nor was this to be a regular training meeting to which people were required to go. We wanted our women associates to participate voluntarily in an educational experience. The device we used was a printed invitation on the front of a folder, with the details of the days and hours of our program. On the back of the bulletin we printed simply, 'It's smart to know. Fear can be foolish. Ignorance can be fatal. Knowledge can save a life.'

"To get these distributed throughout the many floors and many areas of our store, we presented the invitations to our divisional superintendents and they in turn got them to the department managers, who got them to the individuals.

"The first morning came and all of us who had worked on this stood at the tearoom entrance and waited, wondering whether any of our worker-associates would turn up. And did they come! Eleven hundred from the parent store and branch stores streamed in to see and learn and ask questions and seek advice.

"But the real effect of this effort at mass health education can best be appreciated by seeing what it did for individuals. Let me give just two examples out of scores which I could relate. A woman, age 58, employed by our store for 27 years, apparently in good health, decided within a few days of seeing the film to go to her own physician for a thorough examination. Three days later her doctor called her at the store and asked her to return for another cell examination. He was not satisfied with the first one. She was terribly frightened and she came to us to find out if a second test would injure her in any way or aggravate an existing condition. We drew a picture for her illustrating the technique for taking the smear and thus convinced her that she had nothing to fear. She went back to her doctor in a receptive frame of mind and very soon had surgery. She is now back at work.

"Another employee became very faint during the showing of the film and had to leave the room for a few minutes. What that employee knew that the nurse didn't know was that she had a lump in her breast which she had chosen to ignore. Seeing the film, 'Time and Two Women,' supplied the impetus which sent her to her doctor. She had a mastectomy almost immediately, following by X-ray therapy, and she, too, is back at work.

"That was only the beginning. One gratifying experience, one positive achievement tends to expand one's vision. Two weeks ago we all shared in another educational experience planned in a similar manner. Our subject was 'Your Heart and Blood Vessels.' This time, over fifteen hundred men and women from both the parent and branch stores came to learn, to ask, to seek help. Over six hundred of these people made a special trip to the medical department to get booklets on varicose veins, hypertension, and strokes. Each time they get one of the books they ask more questions. They get personal counseling.

"No longer do we have to wonder whether we can lead our people toward better care for their own health. Today, men and women are telling others with whom they have shared their pamphlets about the relatives they have persuaded to go for a complete check-up, thanks to the friendly counseling which has given them the courage to face facts and seek help."

#### *The Small Plant and Health Education*

While most of the case histories of health education discussed at the 1959 Health Forum involved large- or medium-sized companies with intensive industrial medical programs, it is significant to note that health education is one area in which small plants, with only a part-time doctor and a nurse, are not at a disadvantage as compared with large companies. Educational materials—pamphlets, leaflets, posters, films, slides, etc.—are equally available to all and can be obtained from numerous sources. Voluntary health agencies are, in general, anxious to reach industrial workers and draw no distinction as between small plants and large in accepting opportunities to bring their programs inside the factory gates. Counseling can often be more effective in the small plant than in the large, simply because the nurse and doctor in the former are not likely to be shifted from one group of workers or one plant area to another and, therefore, have a longer acquaintance and a closer relationship with the workers they serve.

In both the small plant and the large, of course, health education serves the same function: to help the workers improve and maintain their health and thus to reduce the cost of ill health to both employers and employees.

## HEALTH EDUCATION IN INDUSTRY

---

Dr. A. L. Bravo, Chief, Social and Occupational  
Health Section, World Health Organization

### *The Problem: Lack of Information*

It is common knowledge nowadays in most populations of the world that smallpox or malaria are communicable diseases which can be avoided either by vaccination or by eradication of mosquitos. But, generally speaking, people are not so aware of the risks involved in day-to-day industrial work. Moreover, risks are taken as something inherent in certain jobs and we have even seen the case of workers who consider it a matter of male pride to undergo the most incredible and unnecessary risks during the performance of their jobs. We have all seen the window-cleaner working on the top floor of a building without a safety belt, and industrial physicians know of the mask hidden on a shelf of a glass factory while the worker is handling silica powder with his nose covered by a useless handkerchief.

On the other hand, management can hardly realize the close ties existing between factory safety and industrial output. We have heard an industrialist say, "Yes, doctor, I know of the lack of safety devices in my factory, but the prices allowed for my products do not give me the money to improve the situation" and he has glanced at us indulgently when we argued that possibly a small investment in some safety devices would increase profits in the form of a better and bigger output and of savings in sickness compensation.

This lack of information on the part of the people concerned is one of the most important drawbacks in launching a programme of occupational health in many parts of the world. It is a well-known fact that any health programme can only be successful when it is based on the intelligent cooperation of the people to be served by the programme. And this is especially true for occupational health programmes which depend very much on the understanding and support of the consumers, that is to say, management and labour.

Fortunately, more and more progressive management and alert trade-unionists are becoming aware of the importance of improved health amongst industrial workers. Many industrialists today have learned that good industrial medical services, well co-ordinated with safety engineering, social services, are a strong factor in fostering industrial output by a reduction in sickness absenteeism, decreased sickness compensation, improved labour turnover and increased workers' happiness and efficiency. Trade unionists also realize that a healthy individual contributes enormously toward improving family standards of living, which is in actual fact the ultimate goal of the trade unions movement.

### *The Answer: Health Education*

By a continuous process of health education, management and labor can and should be brought into the focus of activities in order to attain the highest possible level of health. Health education cannot be imposed upon unaware people. We need the active-cooperation of the groups concerned and past experience has shown that health education should be a joint concern, planned and promoted jointly by representatives of management and unions and with the technical advice of professional people.

In launching such a programme we ought to bear in mind that industrial health education and safety education, while important as they are, do not give the full answer to the problem. In fact, the industrial environment is the place where the industrial employee spends one-third of his time, the other two-thirds being spent at home or in social activities in the community. We cannot overlook the fact that the worker is a member of a family and lives in a community where he is exposed to all health hazards prevalent in that particular area. As a matter of fact, it has been demonstrated that not less than 90 per cent of the worker's illness is due to diseases other than occupational. There is, therefore, a need for the integral health education of the worker, and so through a slow process which will take years or even generations to make everybody health conscious, we can gradually influence health conditions and practice not only in the place of employment but also in the home and in the society as a whole.

In the past there was a great deal of reluctance to teach people facts about health and disease. This was due to a fear that too much detailed information might frighten the individual receiving the information. In the case of the industrial worker, he was expected to have inconvenient reactions and even feel inclined to leave his job. With the advance in safety devices and improved health education methods, however, this approach does not hold true any longer. It would be a great mistake to hide the risks or to alter (either minimize or exaggerate) their nature. What consumers, management and labour best appreciate from the health workers is a realistic picture that will resist criticism and yet still hold true after comparison with actual facts. Knowledge and tact are thus the skills needed by the health worker to meet the need of health education in industrial concerns.

#### *The Scope of Health Education in Industry*

Health education is a method in health work which is not intended to provide services for the individual but rather to help him remove adverse habits from his behaviour and adopt by himself a healthy attitude towards life. Health education is not merely the dissemination of health information; its objectives are best achieved by personal experience obtained through participation in the planning and carrying out of programmes.

That is why in industry the health education programme should be planned with the help of management and labour as well as professional persons. The programme should be designed to serve both industrialists and trade-unionists by establishing a common ground of understanding and aimed at the improvement of healthy working conditions and to the development of the interest and knowledge of the individuals in health problems. It should not interfere with actual plant operations and should not upset the worker's private life by taking too much of his leisure time.

Another important point to bear in mind is that pure health education, without the simultaneous provision of health care services, though well-intentioned, remains highly theoretical. Health education needs the vitality that comes from close association with a health care programme.

In many instances, a medical care clinic is the spearhead to getting in touch with the people and a medical consultation the best opportunity to start talking about health. Opinion has been expressed in the sense that "as long as insufficient income stands as a barrier between hundreds of thousands of people and adequate medical care, so long will health education fall short of its mission. Bad housing, poor clothing, and inadequate diet are detriments to health which must be dealt with." Otherwise health education may become an unrealistic sort of theoretical propaganda.

The old discussion of which is better: improvement of physical safety facilities or development of the awareness of individual safety has been apparently settled by saying that both are important and have a place in an occupational health program. Health education can promote both approaches, the former by educating management and the latter by educating workers in health and safety problems

#### *Methodology in Health Education*

To get our health message across to industrial employees—usually over-worked and sometimes preoccupied by economic problems—is not an easy job and definitely not the job for one person but the responsibility of a team. The physician, the nurse, the social worker, the psychologist, and the health educator should cooperate and they all have a role to play. They should all be familiar with health education methodology and should all be inspired by the same aim so as to impart health education, taking advantage of every possible opportunity.

One of the major difficulties in health education of the public, whether within the factory or without, is that the health worker tries to persuade the individual to do something different from what he is used to or from what he likes to do. Very often this new behaviour produces less satisfaction and sometimes clashes with old and cherished habits and beliefs.

It is obvious that such modification in his habits and beliefs provokes a logical reaction or resistance in the individual. It is only reluctantly that the diabetic accepts a reduction in his carbohydrate intake or the miner decides to wear a mask. In

the former case, the man has to sacrifice his natural inclination for sweets and in the latter has to adopt a device which gives him physical discomfort. It is, therefore, only logical that in both cases he is not inclined to follow the advice of his health counsellor whether doctor, nurse, safety engineer, health educator, or others.

There are methods and approaches that help the health worker to establish a two-way contact with people. One of these approaches, and probably the most effective, is for the health worker to ascertain what are the main interests, problems, and incentives of the people which can serve as the basis for establishing health education activities. The birth of a baby, a serious disease to himself or to a member of his family, a recent accident in the factory or in another similar plant are opportunities which the health worker has to watch and to use in all their varied possibilities. In addition, new interests can also be provoked intelligently for instance by means of a well-organized health demonstration.

Once the person or the group have become interested, their attention should be kept on the health subject by providing an interesting and changeable course of education. Monotony can be avoided by alternating health matters with other subjects, and interest is much higher when education is given an argument related to normal daily life, according to local habits. Any local event that stimulates the interest of the social group should be used for health educational purposes. A worker who is actively engaged in other work calling strongly on his attention is certainly bound to be a poor participant in an industrial health education programme. But even in this case, an intelligent health worker can find out what his primary concern is and eventually propose a health matter for discussion that in one way or another is related to the subject of his attention.

Health workers ought to be conscious that this is a long and slow process which may take years and even generations to get into the minds of a significant proportion of the population. We are likely to be misunderstood and perhaps ignored at the beginning. Management may regard the health worker as a nice theoretical idealist and labour may consider health education with some suspicion as the sweet cast to swallow a bitter pill

prepared by the management. Such possible reactions should not discourage the health worker. They must act as a stimulant to improve our methods with tact and understanding. We can only get lasting results if we succeed first in gaining the confidence and support of management and labor. Moreover, we should bear in mind that the process of education—for health or otherwise—is not only a one-way flow of knowledge from a cultivated to an ignorant mind. It is, on the contrary, an active process whereby the educator stimulates curiosity and the recipient finds his own truth. The hows and wheres have to be discovered in a joint effort.

To succeed in obtaining the confidence of the consumer, the health worker has to acquaint himself with the technological process of the plant in addition to attaining high skills in health matters. Industrial workers usually know much more than expected of their problems. The health worker can easily get their confidence if he shows a fairly good understanding of technological activities and a very good knowledge of matters related to health, which are not well known to the industrial worker. Answers to their questions should be quick, brief and clear. Facts in health and disease should not be hidden but explained with frankness and without fear. Such an attitude will lead to the desired goal, e.g., to obtain the confidence of management and labour. Management appreciates skills and labour likes frankness. With these two qualities the health worker will be able to reach his required position as a link between industrialists and workers in matters of health.

#### *A Programme of Health and Safety Education for an Industrial Community*

After what has been said in the preceding pages, we feel authorized to change slightly the subject of this paper so as to put the emphasis on the industrial community rather than on industry alone. What we want to bring out is that health and safety education, if it is to become deeply rooted in the habits of the population and actually to improve health conditions, needs to approach the industrial worker not as an isolated entity, but as a member of a family and part of a community; in other words in

his relations and inter-actions with the physical, social, economic, and emotional environment.

In the following lines, several types of health and safety education activities will be described—these are not necessarily chronological steps in organization, nor should the list be considered exhaustive. They are approaches which have been successful in some places and which may be applied when organizing a health education programme for an industrial community.

(1) *Teaching Health and Safety in Schools.*—In an industrial community, youngsters attending schools are normally sons and daughters of industrial workers and likely to become themselves the labour force of tomorrow. It is, thus, only sensible to educate these young people in health and safety at an age when they are more receptive to educational methods with a view towards the creation of a new generation of health and safety-minded workers.

The objectives of such a programme should be to develop in the students (1) a mental attitude towards hygienic habits and safety in the working environment, and (2) an awareness of the anatomical structure and physiological needs of the human body.

Industrial health workers should take the initiative if such a programme has not been launched and invite school teachers to spend not more than one to two hours a week of the teaching curriculum to teaching health and safety. Teaching material should be provided and probably the health worker himself may have to undertake the teaching at the beginning. The ultimate goal should be, nevertheless, to train the teacher himself to carry on and to make health and safety subjects a routine in the school curriculum.

(2) *Teaching Health and Safety in Vocational and Technological Schools.*—Still more important than the primary or high schools is the contribution that vocational and industrial courses can make to the building-up of new generations of industrial workers conscious of the value of human life and aware of the means to protect it both in normal civil life and at the place of employment.

The objective here is broader than in elementary schools, since students at this educational level are going to be the industrial engineers of the future. Therefore the aim of the programme is to teach them methods and organization of industrial health and

safety services in a plant and eventually to create specially the post of industrial safety engineer or inspector. All the plans and procedures which have been found most effective in industrial safety promotion should be used at this level of education. Students are expected to personally participate in the organization of teams and committees or in the preparation of bulletins, meetings, demonstrations, etc., in the same way as is done in a plant.

Industrial procedures should be so organized as to show that efficient production and safety go hand in hand. Students with a flair for these problems should be made leaders and they might eventually receive further training in health and safety matters. This would thus provide industry with the type of professional (i.e., the industrial safety inspector) who can do much for health and safety of his fellow workers since he, as a worker himself, is in the best position to appreciate the risks and interpret the wishes of the group.

Such courses in vocational schools should cover from accident prevention and first-aid to personal hygiene, including nutrition education, use of leisure hours, proper rest and sleep, dangers of consumption of alcohol and tobacco, as well as prevention of communicable and occupational diseases.

Whenever a programme of this kind has been launched, results have been most encouraging. Helping to build up health and safety awareness of industrial workers appears to be, up to now, the most effective way of controlling occupational accidents and diseases.

(3) *Health Education on the Job.*—But workers' education in health and safety does not end in the school. Steadiness and repetition are well-known conditions of education which should also be used by the health educator. The process of education is continuous and should be carried on into the factory.

The establishment of a *health and safety committee* composed of representatives of the management, the unions, and the health workers is usually a practical first step. The objectives of such committees are to study the health conditions of the environment and to draw up a programme of action to improve the understanding of health problems amongst plant employees. Some health education leaders can be quickly selected from amongst those employees showing interest and knowledge or having some

previous experience in launching programmes of this kind. They should be persons held in great prestige among their fellow workers. The functions of these leaders should be to hold responsibility for the activities of the committee and eventually establish new committees in special sections of the plant or in other groups of workers in the case of small shops.

*Group discussion* is probably one of the first activities to be undertaken by the committee. The amount of interest amongst workers in such group discussions is often surprising. Experience shows that sex matters related to conception, family planning, and pregnancy are subjects of highest interest. If such is the case, the health worker should not hesitate to tackle those subjects with an open mind. A good start in such discussions may determine the further success of the whole programme. Any subject is good for such group discussions and if the group wants to discuss a matter other than health and safety, it should be allowed to do so. The health worker in this event should be alert to introduce health topics into the discussion at any opportunity.

*Recognition of the interests* of the group is very important for the success of the discussions. For this reason it is usually convenient to get together groups with a common interest in the subject for discussion. Expectant and young mothers are, for instance, motivated towards the same topic: e.g., pregnancy, delivery and care of the baby. Expectant mothers can get together in mothers' clubs for knitting or sewing and at the same time discuss, with the advice of a nurse or midwife, problems which concern them. Overweight and diabetic workers may gather for lunch and discuss nutrition problems with the help of a doctor or a nutritionist if available.

These meetings can be arranged not only in a well-organized huge and modern factory, but also in an industrial community where workers might be independent small shop-owners who nevertheless usually have common problems and live in the same district. The public health service rather than the industrial medical service, which may not exist, has in this case a challenge to meet.

*Visual aids*, such as posters, leaflets which can be taken home, films, slides or the simple flannel board, are of great help to

conduct and attract interest towards group discussions. Printed material is more useful when it refers to only one subject. In that way the suspected tuberculosis patient will take away the tuberculosis pamphlet and read it with great interest, or the overweight worker will be attracted by the nutrition leaflet. A single booklet covering several subjects would be more expensive, regarded as too heavy reading material by most of the workers and individual interest in one particular topic would be lost.

*Wall newspapers, a periodical health bulletin*, radio and television programmes are also means which can be used. This type of communication has to be carefully planned to be of real help. One fundamental condition is that, while placing the emphasis on health, the form of presentation should not be only health. As far as possible the programme should be given an argument and the argument should refer to small details of local daily life, so that the reader or listener may recognize his own habits in the course of the programme. The kind of programme and the literature to be used should be selected and, if possible, prepared by the workers themselves, with the technical advice of the health worker concerned.

A more advanced stage of group teachings is the *health demonstration*. All previous procedures can be used and in addition a health exhibit can be arranged. The subject matter should be of a general character and approached from different angles, so that the best possible advantage may be taken. For instance, the subject "Food" can be presented from the points of view of production, distribution, market hygiene, price, cooking, chemical composition, importance of protein consumption, protective foods, dangerous foods, calories, food handling, food preservation, fatty foods, food additives, etc. Each aspect of the problem should be illustrated by a model or a sample, a film or photograph in order to give a vivid and dynamic picture of the process. Simple comparative statistical data are also of great assistance, especially if the teaching matter is compared with material of common use and well-known to the audience.

*Safety demonstrations* are also of great importance. Here again, the subject must be of a general character, e.g., "the eyes of the worker," and start with some anatomical and physiological in-

formation, insist on the importance of eye-glasses to avoid accidents and improve efficiency when deficient visual acuity makes glasses necessary, analyse eye accidents and their prevention, study ophthalmic occupational diseases, the importance of protective glasses of different kinds for different purposes, etc.

The preparation of the material for these health and safety demonstrations will take a long time and occupy many workers who may find great enjoyment in preparing models or collecting samples. The practical lessons they will draw from this experience will be long-lasting and eventually be transmitted to the next generation.

A large and elaborate health demonstration can form the basis for the celebration of a *health and safety day or week*, which has proved to be of enormous attraction to people. In such an enterprise all the resources available within the community should be engaged in an effort to make a deep impact on the population. The concurrence of the local civil and religious authorities should be sought, health demonstrations should be alternated with sports and social gatherings, all available means of communication should be used, and health and safety should be brought into the picture at every opportunity.

Whilst accepting the importance of these group activities, many health educators think that the greatest benefit is drawn from *personal interviews and counselling*. This is especially true in the case of expectant mothers who highly appreciate the personal advice and individual consideration given them by the doctor or midwife. Time-consuming though it is, the health worker cannot neglect this kind of personal approach which in many cases of a psychological character is the only one possible.

There are, finally, *special groups*, which need independent consideration, as in the case, for instance, of the migrant or seasonal worker who may find himself maladjusted to the industrial environment and who faces the risks of urban life and factory work ill-prepared and sometimes ill-advised. This is a group with a very particular motivation which might well be used by the health worker to impart a special type of education.

The key to the success of a health education programme is self-government. The active participation of representatives of management and unions at all stages of planning and operation of the

programme is not only desirable but indispensable. They should provide the ideas and to the greatest possible extent actually do things themselves. The health worker should confine himself to the role of an adviser.

Along the preceding lines, we have tried to draw up the objectives, methodology, and organization of a health and safety education program for an industrial community. This paper is a summary of experiences published by health workers from different parts of the world, presented in a coordinated sequence. A bibliography is appended for the benefit of those who may wish to make a deeper study of the subject.

We do not pretend to have described all the multiple alternatives of a health and safety education programme. Industrial plants vary enormously from one enterprise to another and working conditions vary extremely in different countries. The development of industrial medical services is also variable and the availability of health personnel is not comparable between countries in different areas of the world. Therefore only general principles can be set up and they have necessarily to be adjusted to local conditions of work.

Most educational programmes have been designed to be applied to large factories where there is a medical service regularly available. Nevertheless, we have to bear in mind that a great deal of the industrial work is done in small shops by independent or semi-independent workers, for whom industrial medical services are not normally available. It is, in our opinion, the responsibility of public health services to undertake the health education of these workers as part of an overall occupational health program.

Only by a continuous process of education can we expect to improve the health and safety of our labour force. The results are slow in showing themselves, but long-lasting.

#### *Summary*

It is stated that one of the difficulties in improving health and safety in industrial concerns is lack of information about these problems by both management and labour. These groups are the eventual consumers of a health education programme. At the same time they should actively participate in all stages of the programme.

A well coordinated programme of health education for workers would improve the situation but it is not the full answer to the problem since the worker is as exposed as any other member of the community to all the risks of the general population. He should be approached, bearing in mind that he is a member of a family and lives in a community.

The objectives of a programme of health and safety education of an industrial community are to improve the health working conditions and to develop the interest and knowledge of individuals in health problems. Pure health education without the provision of health care services risks becoming theoretical.

Team-work is recommended in order to obtain better results. All health workers should be familiar with the methodology of health education to play their roles properly. Usually it is necessary to induce people to modify their habits. Understanding the interests, problems, and incentives of the individual is important in order to obtain his cooperation. Furthermore his attention should be kept and his interest stimulated. This is a slow and long process and it may take generations to actually modify the habits of a given society. Skill and frankness are indispensable to the health worker in order to obtain the confidence of the consumers.

The teaching of health and safety in elementary and vocational schools is recommended so as to create a health and safety-minded generation who are the workers of tomorrow. Different methods of health education on the job are proposed such as group discussions, visual aids (posters, leaflets, films, slides, etc.) as well as wall newspapers, periodical health bulletins, radio and television programmes. Health demonstrations and the celebration of a health day or week are more elaborate processes which produce very encouraging results.

What is important in all these educational activities is to give the program self-government in the sense that representatives of management and labour decide by themselves on the planning and implementation of the programme and to use simple local arguments in which health matters are included.

Personal interviews and counselling cannot be overlooked, although the time factor can be a reason for limiting their use to those cases that cannot be treated in a group.

The special situation of small shops where medical services are not available is brought to the attention of public health services.

### References

- Berry, C. M. (1954), Responsibility of the Professions in the Health Education of the Employee. *Industr. Med. Surg.*, p. 301.
- Bogolepova, L. (1956), Scientific Research in Health Education. *Health Education Journal*, vol. XIV, No. 2.
- Burton, J. (1956), Health Education in the USSR. *Publ. Hlth (Lond.)*, vol. LXIX, No. 7.
- Industr. Hyg. Newslett.* 1949, vol. 9, N- 4, p. 3.
- Industr. Hyg. Newslett.* 1949, vol. 9, No. 5, p. 12.
- Macek, Olga (1955), Health Education in Industry—A Case History. *Health Education Journal*, vol. XII, No. 2.
- Metropolitan Life Insurance Co. Safety Bureau. *Industrial Safety*. New York.
- Metropolitan Life Insurance Co. Metropolitan Services in Industrial Health and Safety, New York:
- . A Formula for Child Safety, New York.
- . Industrial Safety Education in Schools, New York.
- Robinson, Cornelia (1954), A Pilot Study. *Nursing World*.
- Shepard, W. P. (1956), Experience in Communication and Persuasion in the Area of Health, *Industr. Med. Surg.*, vol. 25, No. 6.
- Stoves, Vera (1950), Health Education in Industry. *Journal for Industrial Nurses*, vol. 2, No. 3.
- Sutherland, R. (7 April 1945), The Nurse's Key Part in Industry. *Nursing Mirror*.
- Sutherland, R. (25 January 1947), The Health of the Adolescent in Industry. *Nursing Times*.
- Sutherland, R. (August–September 1944), Promoting Industrial Health. *Labour Management*.
- U.S. Government Printing Office (1945). *At your Service*.
- World Health Organization, Expert Committee on Health Education of the Public, Wld. Hlth. Org. techn. Rep. Ser. 89.

## HEALTH EDUCATION OF THE WORKER

---

J. S. Felton, M.D., Professor of Occupational Health,  
Schools of Medicine and Public Health, University  
of California, Los Angeles\*

STANDARD TO MOST programs in occupational health is an activity segment devoted to health education. Whether the principle is delineated by an international body (1), by spokesmen organizations of individual countries (2, 3), or by specific disciplinary groups within the health team in industry (4), the consensus points to worker health education as a recognized undertaking. Because of this approval it has behooved medical directors to be energetic in providing information on health, and a variety of efforts has been encountered in American industries, from the desultory to the detailed. Yet rare is the analysis of the effectiveness in a single industry of one measure over any other, and almost absent have been good control groups established for validation of program worth.

It is the purpose of this writing to offer emphasis on the group method and, in passing, to state beliefs:

1. The less mature the medical activity in industry, the less recognition there is of any needed interrelationship between mental health principles and the educative process.
2. The younger or less professionally sophisticated the "educator," irrespective of his tag—physician, nurse, health educator, or hygienist—and the younger the industrial medical program, the greater will be the reliance upon the traditional printed materials for generalized programs.
3. The more distant, physically and emotionally, the educator is from the group to be taught, the greater will be the use of inanimate published devices.
4. A program of health education, to be successful or accepted—whatever the criteria for this might be—must involve medical action in the form of preventive surveil-

---

\*Proceedings: 13th International Congress on Occupational Health, July 25-29 1960, New York, pp. 413-426.

lance, aggressive therapy, or both. (These forms of action might be taken individually, or irrespective of each other, concomitantly or sequentially. For learning there must be interactive participation in a medicine-involved situation.)

#### *Needs for Health Education*

The loss to industry of production time from sickness absence has been estimated for one large public utility with an effective medical department to approximate \$10,450,000 per year (5). This company employs 75,000 persons, so that the cost burden carried by the organization is about \$140 annually for each person on the payroll. These figures do not include additional losses from lowered efficiency resulting from the thinning of the remaining work force. The National Health Survey has shown that 7.9 work-loss-days per employed person per year were experienced in 1957 (6). With the current estimates of the labor force fluctuating around 67,900,000 plus, one can see the indisputably mammoth dimension of this state of morbidity in industry.

Both physical and mental illnesses have their element of contagion, and even elementary epidemiologic explorations of medical department data can pinpoint work groups at high risks because of accident repetition, depressed morale, or apprehension over potentially hazardous work exposures. The personality malfunction of a supervisor can produce a totally ineffective, disaffected work force. Impaired relationships between a managerial group—"the company"—and the employees can result in endemic seeding of psychophysiologic reactions which will resist ordinary prudent medical care for prolonged periods.

There are indications in industry, therefore, for definitive guiding action toward correction of improper health behavior, if for no other reason than a monetary one. The improvement in the general sense of fitness, well-being, and capacity to demonstrate "bounce" will provide the worker with a solid planking upon which he can realize his resources to the fullest. This implies a dividend of satisfaction in living and in doing, accruing a fulfillment untrammelled by restrictive symptoms or organic change. Attainable, therefore, through health educative means is the dual goal of work—productive effort and a sense of gratification.

### *The Concept of Health Education*

Definitions of health education have been attempted by numerous individuals and groups, all related closely or remotely to a medical care setting. At the Fifth World Health Assembly held in 1952, an Expert Committee on Health Education of the Public convened and inquired into all areas germane to this activity (7). It was the Committee's belief that health education, like education in general, was concerned with change in the knowledge, feelings, and behavior of people. Usually it concentrates upon the development of health practices believed to bring about the best possible state of well-being.

Hiscock's view of health education (8) included "all those experiences and processes by which people's attitudes toward their own and the public's health may be guided, and all the influences that will improve the health behavior of the individual and the health level of community life." Gebhard (9), who has been America's leading protagonist of the health museum, put it simply when he observed that "Health education means leading people to be at ease physically and mentally."

Other interpretations have been these: Skinner and Derryberry (10) in their review of health education as an outpatient clinic activity, looked upon this as being analogous to medicine, which was considered to be "the art of applying basic biological sciences for the benefit of the physical health of the individual." To them, health education was "the art of applying an equally basic body of knowledge about the ways in which people acquire information, develop attitudes, and change their behavior about health." In 1959 Harnett and Shaw (11) summarized the statements of 14 prominent health educators, who had been asked by the American Public Health Association to prepare brief descriptions of their specialty field (12):

1. Health education is an instrument, a process, and a means of providing ideas, information, and knowledge for the purpose of influencing people.
2. Education for health is more than merely presenting information. To achieve effective results, there must be a process of acceptance, development, and change within the learner.

3. Health education attempts to motivate people, persuading them to understand, accept, and apply what they are learning.
4. To be useful and meaningful, health education must be carefully planned and effectively conducted by the teacher or health educator.
5. Health education is a highly personal motivation for individuals toward healthy living arousing social action, developing awareness, and stimulating the use of health and medical resources.
6. Health education is an end result and a sum of all our experiences and motivations which add to health knowledge or influence health behavior.

This *series* of interpretations might be concluded with a paraphrase of the specific aim of health counseling (13), which is a step beyond health education and is applied to workers rather than to school-children:

1. To give workers such information about their health status, revealed by appraisal procedures, as they can use to good advantage.
2. To interpret to workers and their families the significance of health problems, and to encourage them to obtain needed care.
3. To motivate workers so that they will want and accept needed treatment.
4. To promote each worker's acceptance of responsibility for his own health, in keeping with his stage of maturity.
5. To contribute to the health education of workers through individual conferences concerning health problems.
6. To gain understanding of the attitudes, problems, and needs of workers which may be dealt with in groups or through changes in the environment.

Common to all of these clarifying statements are the elements of (a) a body of knowledge; (b) a system of communication; (c) a method of motivation; (d) change of worker attitude; (e) evidence of action; and (f) a betterment of adjustment.

Implicit in this sextet of elements, particularly when viewed in the industrial setting, are joint planning and participation. These come into being after expression or demonstration of areas of need

and interest by the worker and acceptance of suggested ideas for development by the educator. All of the contemporary concepts of education in health are applicable fully by the health team within industry and, as will be demonstrated, by the community agency which can offer intramural services to the business, manufacturing, or commercial enterprise.

### *The Operational Area*

The term "industry" is used here in a generic sense to represent any worksite where few or many people assemble each day to carry out a job of work. These tasks might be repetitive or uniquely creative, physical or cogitative, emotionally-involved or equipment-relating, or degrading or prestigious. They can be found in manufacturing plants; wholesale and retail sales organizations; public utilities; research institutions; service establishments, such as hospitals, parcel delivery companies, or laundries; institutes of learning; or branches or agencies of federal, state, or municipal government. "Industry," therefore, is the daily rendezvous point for hundreds of millions of people who, in varying degrees, are satisfying emotional needs while accruing an income to sustain the lives of themselves and their dependents.

The establishments might range in size from a few workers to tens of thousands; might be in an urban or rural setting; might be family-owned, corporate, or cooperative in structure; might be the headquarters plant, distant branch, wholly owned subsidiary of a large parent company, the fabricating base of an old unchanging line of commodities, or the stress-filled home of an organization undergoing diversification demanded by product obsolescence.

It is in these situations—with full in-plant medical departments, occupational health nursing services or visiting part-time medical consultants—that activities in health education are being born or nourished, or are in full flourish or imminent decline.

### *Some Contemporary Programs*

Before endeavoring a delineation of the principles to be involved in a successful program, it would be illuminating to

learn of some past or ongoing industrial health educational efforts. Programs divide into two varieties—one which encompasses any or many health problems germane to the plant personnel, and the other which is based upon the presence of one particular material or process potentially hazardous to health. The latter have been encountered in the petrochemical industry and atomic energy plants particularly, and more recently in activities concerned with the use of high-energy propellant fuels for missiles.

Historically, of course, efforts to bring about practices inimical to the acquisition of disease have been encountered in all cultures, in parallel with the contemporary body of theory regarding illness etiologies. Action relative to health preservation was creedal, engineering, philosophic, or legislative. Modern movements in health education date back approximately 50 years, and coursed through three phases, as outlined by Galdston (14). The first was concerned with the presentation of facts, "crude, bare, and startling" though they were. Tuberculous lungs were displayed, and pictures of unbelievable housing were put before the viewers. The second period rose somewhat above the teaching of disease to what Galdston referred to as Pavlovian motivation, in which the stimulus still came to the learner from without but was presented to him through somewhat colored facts though in a highly palatable manner. The last of the techniques used was the connecting of the health information directly to the individual needs of the target person. The most extensive programs have been initiated since our knowledge of disease causation broadened and since regulatory measures for the public health became significant portions of federal, state, and municipal law.

#### *Industry's Experience*

The increased awareness of the worker, the trade-union leader, and the employer of the effects of deleterious work exposures, plus the introduction into industry of numerous new toxic chemicals and dangerous forms of physical energy have brought about a second reason for intensification of programing in health education. To be sure, case finding has been undertaken at the

work scene since the early introduction of the required physical examination for employment. Whereas today the yield of such procedures is utilized for inciting corrective action, rarely has it been applied in comparable manner following rejections for work. Industry's health teams have aimed at a variety of goals in the past. Moving away from informing adults about community sanitation, certain communicable and incurable diseases, care for the expectant mother, and "parent responsibility for children's health," there was, as Pritchard (15) observed, need "to help adults deal effectively with situations affecting their personal health." Health instruction of workers was aimed at rectifying those adult health problems which were productive of absenteeism, income loss, and early dependency. Further, because of risk exposure characteristic only of the industrial population, instruction was focused on familiarizing the employee with the potential hazards in his job and the measures he might take to preclude the development of occupational disease.

Early in World War II the U.S. Public Health Service (15) initiated its first industrial health education venture with the publication of illustrated leaflets, color posters, photographic exhibits, transcribed radio programs, and a motion picture. (A survey showed that among 2,500 pamphlets produced by 115 agencies, only 36 publications on industrial hygiene were to be found. At best, only 20 of these were written to inform the worker on potential hazards and the means to avoid them.) The new leaflets became well known around war plants and were divided into two groups—ten important nonindustrial health problems, and ten job-related situations. For example, one of the publications of the latter group included reviews of carbon monoxide, benzol, dermatoses, and the dust diseases, among others. By 1942, the first three of the Workers' Health Series leaflets had a sale of 153,043.

The wartime program at an air base has been described by Owen (16), and the objectives, as she viewed them, were: (a) to develop an appreciation on the part of every employee and employer of his responsibility to prevent accidents and to develop and maintain good health; (b) to promote the well-being of the employees, with particular consideration given to physical, mental, family, and environmental health; (c) to promote medical

safety, sanitary, and social welfare services; (d) to interpret legislative programs relating to the health of the worker; and (e) to promote community understanding, interests, and action in providing facilities and services. Implicit in these objectives is the activity encountered in many programs of "selling" the total health facility and its functions. When the facility is one of high merit, this aspect is indeed one for legitimate inclusion in health education.

Owen divided her undertaking into a discussion of individual instruction and group instruction. In the first she delineated the use of follow-up and referral procedures after preplacement and periodic physical examinations, the teaching at the time of the visit for acute conditions, the informative reviews of the nature of venereal disease and the rare indication for occupational readjustment at first notification of the presence of such disease, the reporting and contact follow-up of communicable diseases, the role of mental health in resolving personal problems, and the intelligent use of clinical records for problem identification and correction of causes of absenteeism. Comprising group instruction were such activities as the orientation program for new employees, safety teaching, classes for women employees in personal hygiene, training in food handling, education in communicable diseases, classes for pregnant women, and the preparation of materials on nutrition. Emphasized were the needs for single leadership in plant education and for integration with community activities.

The health promotion components of a World War II industrial medical program have been presented in some detail by the writer (17), and at that time through talks to trainees, the publication of *Health Bulletins*, and the preparation and distribution of posters, information concerning health problems germane to the day was made available to all employees of a Port of Embarkation. Topics included the eating of the basic foods, the wearing of appropriate shoes, preventive measures against the common cold, blood procurement, and care of minor injuries. Figure 1 shows one of the posters designed and used in 1944 [figure not shown].

A novel program originated during the same period in Brooklyn, N.Y., called the Penny Plan for Health Education in Industry

(18). In this plan companies with 50 or more employees were invited to participate. For one cent per employee per month certain health education materials and services were made available. These included: (a) a subscription to a monthly industrial health newsletter; (b) a copy for each employee of a monthly health education tabloid; (c) health education posters correlated with the tabloid; (d) health leaflets for employees; (e) guidance in information of health committees and programs; (f) films and speakers on health subjects; and (g) cooperation in securing chest films, blood tests, nutrition advisory service, and industrial health personnel. No summation of the success or duration of the program was available.

Comments on a few more recent in-plant movements in health promotion indicate some alteration in design. In one city the industrial health council sponsored an in-plant health education program in a local clothing manufacturing company (19). In Atlanta, Georgia, the Industrial Health Council had as its governing body, a board of directors whose membership was equally divided among representatives of employers, employees, and the professions. Among the objectives was included the sponsorship and promotion of health education programs in industry. The pilot study was conducted during the greater portion of 1953, at the plant of Cluett, Peabody and Company, Inc., manufacturers of Arrow shirts for men. It was unusual in that the preparation and presentation of the program were accomplished by a community health agency, and the health educator who developed the program within the plant was supported by the agency and was not on the payroll of the company. Activities included the active sponsorship of the Plant Health Committee, the publication and distribution of a monthly health newsletter, and the provision of health pamphlets.\* During the noon meals speakers from the local medical society, community agencies, and health departments addressed the employees or led group discussions in the plant cafeteria.\*\* Health films were shown weekly, referral

---

\*To offer a single dimension, 36,331 pamphlets on 126 different topics were taken from the literature racks in an eight-month period. This averaged about 27 printed pieces per employee. Were they read, filed, or utilized in other ways?

\*\*In the course of seven months, 25 programs of this type were held, with 30 to 112 persons in attendance.

services were carried out for employees with specific problems, diagnostic tests were offered in the plant (through cooperation of the plant medical and county health departments), and a weight control program, including a special diet table, was offered. While all sponsoring groups were pleased with the program, and the activity channeled information not only to employees but to their families and neighbors, no evaluation, record of before-and-after studies, or documented measurement of attitudes or behavior were encountered. Also, the program presumably was executed only as a short-term demonstration project. Simultaneous with this pilot study was a comparable one at Scripto, Inc., makers of pens and pencils.

One industry, where concern for the health of its employees was great, spearheaded a prolonged total community effort in cooperation with the local cancer society in the education of its workers and families in the early detection of malignant changes (20). The experiences of the people in West Point, Georgia, with this "all-out" program, were documented in a half-hour television show, "Just by Chance," filmed for the American Broadcasting Company. Pointed up were the leadership role an industrial organization can take and the fact that the target need not be one of immediate relationship to the manufacturing process, but of general health concern.

Programming this type of employee education is not necessarily limited to the efforts of a plant medical department, a community agency, or a national insurance company. One paper plant (21) during the execution of a successful safety program lost four highly skilled employees, two from cancer and two from heart disease, within a four-month period. It was decided that, as the basic objective of any safety program was *to keep the man on the job*, and as an employee was just as lost to his job and his company whether disabled by injury or dead from cancer, health education was to be integrated into the safety education activity. Covered were the topics of cancer, heart disease, poliomyelitis, tuberculosis, the common cold, off-the-job safety, and first-aid training. Ellerson, the author of the report of this program, expressed himself as believing that the indirect returns could be seen in "improvement of morale, lowered accident costs [and] increased production efficiency."

Of interest was the comment, made by the same writer, regarding responsibility for health education: "Where a company has a Medical Department separate from the personnel or safety department, *it might be more appropriate* [italics mine] to allow the personnel in the medical department to direct the health education programs. But inclusion of health education in the regular established safety program will cause the least amount of confusion and upheaval to both company and employees, and this method of getting health education across to the employees should certainly be considered regardless of organizational structure of the company."

The atomic energy establishments in the United States have had, since their inception during World War II, full-spectrum preventive medical programs (22). The writer has described (23, 24, 25) the health education program developed under his direction while at the Oak Ridge National Laboratory. This program was built upon a solid planking of a desire to communicate clearly, constantly, and in many media, and to recognize increasingly the distinct worth of the individual employee so that alleviation of his anxiety, whatever its cause, was the immediate action to be taken.

Branchini (26), health educator at the Hanford Atomic Products Operation of the General Electric Company in Richland, Washington, has outlined the program in a community where the industrial medical facilities, the hospital, and the public health unit were administered by the company. A health activities committee with wide employee representation was organized to carry out the health education program. In the plan were a monthly health bulletin, monthly health and safety meetings, special speakers, films, special health campaigns, new employee orientation, and maximal teaching use of dispensary visits.

In a chemical company (27) employee health forums were introduced offering a slightly different concept of on-the-job health promotion.

The initial announcement read:

The Plant Medical Department is instituting on a trial basis a program of Employee Health Forums open to all personnel and designed to provide a

means of dissemination of general health knowledge to our plant population. These forums will consist of movies, talks, and discussion sessions in which we will attempt to answer problems which may be confronting the employee. . . . The purpose of these forums will not be to advise specifically concerning treatment of diseases, but rather to acquaint the individual with the nature of certain diseases and to attempt to correct misconceptions relative to these conditions.

Dr. Marjorie Young (28), in a now often quoted project, attempted to study the existing health education programs in a sample of 25 Massachusetts industries and came to these major conclusions:

1. In-plant health education activities currently offered by community agencies had low interest and appeal to both managerial and union personnel.
2. Activities related to industrial hazards were readily accepted by management, but these were not offered by the agencies relating to the study plants.
3. The presence of full-time in-plant nursing service facilitated promulgation of educative activities related to job-connected injuries and illnesses, but not of the general health education programs.
4. Health education activities which were not integrally part of a medical service were more readily accepted than those of a more general nature.
5. The chief barriers to health education identified by agency, union, and managerial personnel grouped into six major categories: time factors; worker attitudes; agency attitudes, organization, and administration; managerial attitudes; materials and methods of health education; and the plant and its operation.
6. Media and methods requiring little time, effort, space, and minimal interruption of plant activities, such as pamphlets or posters, were utilized more frequently than those demanding time, space, and changes in routine, such as films and group discussions.
7. Multiplicity of voluntary health agencies and the current conflictual situations among them led to strong negative

- attitudes and precluded cooperative efforts at in-plant program planning.
8. Lack of worker interest was seen as a major barrier to general health promotion, yet agencies attempted to superimpose their activities without pre-determining worker needs, interests, values, or backgrounds.
  9. There was no evidence of evaluation of the programs, as seen in the lack of established goals or evaluative criteria.
  10. There was considerable doubt as to the appropriateness of the plant setting as the scene of health education, and a feeling that out-plant community groups might be used to greater advantage.

Pointed up in this study was the indicated re-examination of worker need and current health education philosophies, programs, and materials. The absence of evaluation merely prolongs the perpetuation of errors in what is perceived and what is offered. The industrial plant is an ideal site for the establishment of learning situations but, presumably, the community agency has not made an acceptable inroad.

In an eight-year study conducted in the same area, Hazen, Roberts, and Young (29), working in 16 plants, explored the manner of coordinating agency health education services for industry, and the educational patterns which would be practical in the industrial setting. Because of singularity of interests among the participating agencies, coordination of effort was incomplete, and although coordination at the planning level was attainable, extension to the level of joint action was not reached with the same ease. Significantly related variables were encountered in the positive support given the programs by managerial personnel and the ineffectiveness of plant health committees.

There seemed to be minimal participation of trade unionists in the planning, and discouraging to encounter was that, "Conference with industrial nurses and with personnel directors revealed that they did not understand, generally, what health education is, but that they are concerned about production, employee absenteeism and the cost of group health insurance and that they have some responsibilities with respect to employee health.

They do not see a direct relationship, however, between these concerns and responsibilities and health education."

Somewhere in this area of exploration the more knowledgeable industrial nurses were not found, or the intervention of outside agencies was resisted through a lack of more active utilization of the nurse in the program itself. Disinterest might have been misinterpreted from the passivity shown. It would have been of interest to have known of the strength of the medical departments in the plants included in the study. As with all research, further hypotheses derived from the findings need testing in additional comprehensive research settings.

#### *Programs in Hazard Control*

As indicated previously in this writing, programs in health promotion are initiated in certain industries to permit familiarization of the workers with potential health hazards in their work contacts. In a timely review of educational activities in industry, Sexton (30) presented a program designed and used in a 2,000-worker chemical plant, for the orientation of employees to the hazards of hydrogen cyanide, ethylene oxide, and toxic chemicals in general. Of particular value in this program was the evaluation of its effectiveness, which included not only the reactions of the workers to the media provided, but also the reactions of their families. In planning the program, many of the deficits of previous ventures, such as those pointed out by Young (28), were recognized, and corrections were made in the initial phases.

Chronologically, the first effort at providing information on the toxicity of hydrogen cyanide, at the inception of its large-scale production, was the holding of group discussions with the operative group by the medical director, the safety director, and the production supervisors. The question and answer periods were of extreme interest, and no visual aids were employed. After two years of operation, new personnel was transferred to the unit, and with a post-exposure death of one of these, better training was indicated.

The initial program was enlarged and repeated and a leaflet in a slip case was developed for distribution to the workers of the unit. The material was presented in a forthright manner, and descriptions of the signs and symptoms of hydrogen cyanide

poisoning were offered, in addition to rescue and first-aid instructions. Other booklets of somewhat similar format were published in the interest of preventive medical procedures. These covered injuries from ethylene oxide, from a group of toxic agents going into the production of a single chemical, and general chemical injuries. With the latter brochure went a letter in miniature from the Medical Director, and a personal health identification card.\* Of particular significance was the simultaneous issue to all employees of a letter from the Plant Superintendent, which appears as Figure 4 [figure not shown]. This undertaking represents a new departure in health education: the program had top managerial support in writing, and the materials offered to the workers in no way attempted to minimize the hazards or to depreciate anyone's responsibility for the preservation of health or saving of lives. In the days of active practice of the "assumption of risk" defense, employee orientation was not only unheard of, but thoroughly antithetical to the then best interests of industry. This was pointed up strikingly by Alice Hamilton (31), who wrote of the use of immigrant workers in the United States in 1912, and described the movement of Bulgarians, Serbs, Poles, Italians, and Hungarians to this country to "search for a better life for themselves and their children. Sometimes they thought they had found it, then when sickness struck down the father things grew very black and there were no old friends and neighbors and cousins to fall back on as there had been in the old country." Supersalesmen from steamship lines had painted glowing pictures of the largesse of American jobs and wages, and some 600 Bulgarians left their villages for Chicago. "Of course they took the first job they could find and if it proved to be one that weakened and crippled them—well, that was their bad luck."

The imaginative—or perhaps intelligent, or necessity-indicated—practice of familiarizing employees with the hazardous exposures they will have on the job was initiated somewhat earlier by one of the petroleum companies. In a Manual for Safe Handling of High Boiling Oils from Catalytic Cracking (32),

---

\*Published by the American Medical Association, 535 North Dearborn St., Chicago 10, Ill.

the then bold statement was made. "On the basis of available data, it appears that only those catalytically cracked stocks which boil above 700° F. are suspected of having the property of producing skin cancer." It was stated also that they knew "of no case of cancer in man to have been produced . . . through repeated and prolonged exposure, in a manner similar to the skin exposure of the experimental animals to the oils." The complete series of recommended precautionary practices then was presented with, among other considerations, discussions of equipment care, housekeeping, process equipment design, use of protective clothing, and the role of the medical department.

These programs have exemplified the use of specific approaches in industries where hazards are known, and the objective is to create within the worker a total awareness of environmental dangers and a knowledge of his role in coping with these dangers. While these particular companies epitomize the broader view of occupational health,\* many organizations follow still the archaic belief in isolating the employee from all information which would bring to him reality and truth.

#### *The Milieu for Teaching and Learning*

Many an educator has assumed that, as an industrial plant is the gathering site daily for thousands of people, the workers are captive and will respond to any stimulus, particularly those thought to be good by the stimulator. This assertion is discredited easily by anyone who has attempted to impart information to a group without knowledge of its needs, cultural coloring, ethnic origins, or traditional methods of perceiving health, medicine, and their practitioners. Much has been written of this. As Skinner and Derryberry (10) have put it, "It is important for everyone to become more familiar with the nature of the cultures and the ways of life of others: their goals in life; their values, beliefs, traditions, customs and taboos with respect to health and illness."

---

\* An additional contemporary example of this practice is the plant engaged in the development and testing of propellant fuels. To each worker goes a two- to five-page memorandum on the safety precautions and handling procedures of, for example, unsymmetrical dimethyl hydrazine and fuming nitric acids. In these the toxicity is spelled out to the frontiers of our current knowledge.

But of greater importance to the disseminator of health information in industry is a knowledge of the technology, the operations, or the manufacturing processes. As the worker is concerned intimately with his relationship to the work and its effects on his health, it is this culture media which can be used most productively in stirring up his self-concern. With the emphasis placed upon the hazards of work by trade-union leaders, by physicians in industry, and by the press, which headlines boldly illnesses and injuries in plants, an already structured awareness exists for the addition of the learning.

With this awareness, though, there is apprehension, and this was especially manifest during the early days of the Manhattan District Project, when the newly imported workers to the atomic energy plants were acutely aware of a danger but, of course, could not see, feel, taste, or smell it. Health educative programs established for the alleviation of this kind of apprehension must be built upon the principles of mental health, so that fears stirred up by the job can be partially worked through by knowledge. To effect a change in the beliefs, values, or concepts of the exposed work force, a close relationship must be established between the educator and the recipient of his wares. For this reason, the medical department is placed ideally to become the central operating agency, in contradistinction to the community health agency, the personnel department, or even the employee counselors.

It is to the physicians and nurses of industry that the organically or emotionally troubled worker comes, and the sensitive doctor or nurse, through a warm interrelationship with him, can bring about behavior which will resolve the anxiety-provoking problem. When there is a solid rapport with the employee-patient, when there is mutual confidence, and when there is interdependent trust, then, and then solely, can the educator make any progress in motivating the worker to a change. The altered health behavior might involve a new regard for pronouncements concerning the use of protective devices, the keeping of followup appointments for diagnostic procedures, the serious thought for the well-being of a son or daughter, or the new value placed upon early reporting of symptoms.

A program of education, with the objectives seen in this light, and based upon the premise of respect, indicates that the educator has forsaken his time-known authoritarian position and approach to the employee-patient. Implicit in this, also, is the concept that the educator no longer demands dependency on the part of the worker and a submissive acceptance of every dictum issued by the educator. The nurse, physician, hygienist, and educator—like the teacher in general education—must be mature, recognizing the dignity of the individual he is teaching, and taking care not to add the element of guilt to his pre-existing burden of illness or feeling of anxiety. The use of authoritarian principles in this relationship, as emphasized by Koekebakker (33), is likely to "make his client believe that illness could have been avoided. The patient 'should have taken measures sooner,' 'should have been more careful,' 'should not have become overtired.' Even without the patient's falling ill, a feeling of guilt may arise in connection with the patterns of behavior which the health educator tries to teach his clients." This provokes the opposite kind of behavior, and in place of a positive response, there is negativity resulting from the anxiety, the guilt, the resistance lighted up by the authoritarian "educator."

The problem becomes more complex when a professionally trained health educator is added to the medical team and he finds his methodologies opposed to the rigidity of emotional immaturity encountered occasionally among other members of the medical team, who also try their green skills in education. The patient cannot understand the democratic permissiveness of the learning situation as developed by the educator, when the old autocrat-subject relationship is what he faces during every visit to the industrial dispensary. Let us try to get the feeling tone in these remarks, heard by the writer in various medical installations he has visited. A nurse: "You can't see him [the doctor] now. You'll have to come back later!" Another nurse: "Oh. It's you again." A physician: "You *couldn't* have done this on the job." Another physician: "Go on back to work—you're just goldbricking." A nurse, dispensing some tablets: "Now, take these *for me*." [Italics mine.] Any nurse or any doctor: "Well, how are *we*, today?" Or: "You don't look so sick." And when asked about a diagnosis, a physician: "You don't have

to know." Derogation, suspicion, arrogance, ill temper, and paternalism all operate to cancel any positive feeling the patient could have toward the medical groups. In this milieu of ambivalence, then, the health educator and the patient are both supposed to function effectively, and each is expected to grow.

The health education program, therefore, must have as an intrinsic factor persons who are emotionally mature, who do not need to work through their problems with relatively undefendable employees. A further problem is created through the maintenance of rigid attitudes in the medical installation. Workers identify medical department personnel with the management force, in spite of the attempts of the health staff to retain a position of neutrality. The employee forgets, also, that *the company* pays everyone's salary, and dichotomizes the work force into management and labor, irrespective of union membership or job designation. Because of this view, medical behavior patterns of the type reviewed alienate the worker not only against the health department but against the entire company. Many a negative attitude toward an employer is generated by unthinking behavior in the medical department.

#### *The Ideal Program*

This leads to the configuration of the ideal health education program. As implied earlier, it is based upon these points:

1. A close educator (generically used)-worker relationship, with acceptance of all workers.
2. An understanding of or solicitation of needs.
3. A joint planning and execution by teacher and learner.
4. A maximal use of the group method.
5. A minimal use of printed media, but definitely employed when indicated.
6. A recognition that the job situation is the springboard for general health education.

1. *A close educator-worker relationship.*—This is created by a sense of welcome in the medical department. Every patient feels wanted, and, irrespective of the severity of the condition presented, the staff understands that there is a need for his making the visit, or he would not be there.

A 33-year-old engineer had a long history of a postural disorder of the spine. His visits were dreaded by the medical staff, for he talked endlessly in a tiresome voice, asked questions to which there were no well-established answers—making the staff feel insecure—and rarely followed the suggestions offered. But, eventually, understanding permeated the staff that this man had emotional need for these visits, so that in the future, physicians and nurses, in place of “takin’ to the hills,” greeted him with patience and an insightful capacity to listen. Counseling? Health education? In any event, supportive therapy.

Mr. S. had lost his wife, she having had a metastatic cancer of the breast. At the age of 58 he was lost without her, and he rarely saw his sons and their children, although they lived in the same community. He began to visit the dispensary at increasing intervals because of an old asthmatic bronchitis. The nurses, although realizing the chronicity of his condition, nevertheless gave personalized attention without hesitation. They were aware of his needs for conversation, a modicum of medical care, and a little attention. So Mr. S. received a warming reception on each visit, felt better, and was a more productive group leader because of it. Again—health education or emotional support?

Insightful attitudes result when the educator acquires a knowledge of the role of emotional factors in his own life and those of his clients. But until the educator is sufficiently free from the emotional ties which constrict his own activities or misdirect them, his understanding of the employees’ needs and their manner of expressing these—whether verbally, nonverbally, through action only, or through diverse other means—will tend to be authoritarian and unsuccessful. Only when the teacher is comfortable within himself can he establish a good relationship with another.

2. *Solicitation of Needs.*—To formulate a program without consultation of the employee group is foolhardy. To be sure, one would believe that when cold weather comes, educational efforts should concentrate on the common cold, influenza vaccine injections, physical conditioning for snow removal, and the like. Yet if a merger of the plant with another organization is imminent, or if a new process is going on with vaguely understood health hazards as part of it, or if the plant is readjusting to a

personnel cut-back, then information on respiratory infections will be unwelcome, unnecessary, and unused. At a time of increased tension the objective would be alleviation of the anxiety aroused by the imagery of unemployment, occupational disease, or incapacity. The health educator must be attuned to the feelings of the group and seek out, through inquiry or through an inspection of absenteeism, dispensary visit, or injury records, the particular persons at work who are manifesting evidence of stress. Through the group method, crucial questions germane to possible job loss or illness can be brought out for review, and by providing the correct answers, concerns which have been verbalized can be calmed.

Through an open-door telephone policy employees will feel free to call the physician or nurse at any time and know that the inquiry will not be depreciated. Infrequently this will lead to such calls as the type received by the writer on several occasions. The employee telephones the industrial physician at 10:15 p.m. and states: "I didn't want to bother Dr. Jones [his private physician] so I thought I'd call you." In spite of the provoking prelude, the worker is probably saying that he called his plant physician for he wanted information and clarification which he knew he would get. Through an active acceptance of all inquiries, one will learn the situations truly disturbing to the employees, and from this, directional leads for health education accrue. The primary mechanism in action is the bilateral free flow that allows a comfortable interchange between worker and educator.

3. *Joint Planning.*—Solicitation of and recognition of the expression of need fuse into a system of joint planning between work groups and educator. If one anticipates that the topics of choice will not relate to the significant health problems as perceived by the medical staff, and if one possibly is threatened by this, or if one believes that the group "doesn't need" information on the subject selected, then the health educator should investigate his own inflexibility. Whatever the area of choice, as verbalized by the group in joint session, the educator must follow through and provide opportunities for discussion on that content area.

The trade-union group was invited to aid in planning a health education program. At this particular plant, after consultation "with the boys," the group's officers reported that they wanted information on radiation (the company's primary occupational health hazard), and "that mental health program you have over there." The first suggestion bespoke concern, even after approximately nine years of work experience since the opening of the plant. Further planning was carried out jointly with the union's officials, the Safety Director, a representative of the Health-Physics Division, and the Medical Director. The program was structured, with total agreement, in such a way that a series of nine meetings were held for 100 workers each, each session opened and closed by the union secretary. These were held at weekly intervals, and brief talks were given by a health-physicist, the Safety Director, and the Medical Director, on the basic theme of radiation. The following topics were reviewed at each session: (a) the nature of radiation, (b) safety precautions, and (c) medical responsibilities and the worker's responsibilities. At the conclusion of the brief talks (with slides), discussion was held so that numerous questions could be presented. The Medical Director brought up directly, for clarification, the question of "sterility," in regard to working with radioactive sources or materials. This obviated the employees' inquiry and some embarrassment based upon a lack of pertinent verbal skills. The concern centered actually not around sterility, but impotence. In much the same way that World War II production plants had their old wives' tales and false rumors regarding the effects of riveting and welding, this plant still had its folklore in need of explanation. This was handled lightly and with satisfaction to the men. A further technique was utilized on this occasion which was followed thereafter in all health education efforts. As the planning was shared, so was the carrying out of suggested action. In these discussions with the workers it was emphasized in every summation that precautionary care was not a responsibility of medical surveillance alone, or of health-physics area and personnel monitoring, or of safety engineering, but of all these combined with each person's close observance of work regulations. Health education became then, an explanation of the topic reviewed, and a delineation of assigned functions, to

be executed jointly by employer and employee. This sense of combined responsibility was underscored repeatedly, so that no feeling of paternalism ever was conveyed. These points were the reasons for the success of these meetings, as measured by the feeling of satisfaction expressed by the workers for several weeks: (a) joint planning; (b) joint execution; (c) presentation of factual information; (d) forthright discussion of sensitive areas; (e) adequate time for review of all questions asked; and (f) declaration of joint responsibility in medical safety. The same planning was undergone at a later date for the topic of mental health.

Pointed up here is the necessity for recognizing the immediacy of an expressed problem, for developing jointly the relevant counsel, and for demonstrating the fact that the goals decided upon conjointly are realistic and immediately obtainable.

4. *A Maximal Use of the Group Method.*—As implied in the paragraphs just presented, the group discussion is the method of choice with workers. This provides for the free review of a subject, in a democratic milieu, and is thoroughly conceivable in American industry. Klapper (34) expressed it well when he wrote, "Face-to-face discourse is generally regarded as the most effective instrument of pedagogy and persuasion by virtue of such capabilities as flexibility, immediate provision of reward or punishment, and other characteristics deriving directly from the personal relationship involved." There are advantages beyond the obvious ones of unhampered interchange. The format permits the group to know the educator as a person when he serves as discussion leader. If the educator of the moment is the plant physician or nurse, this newborn relationship creates a greater degree of freedom or motivation for his reporting to the dispensary. An employee who has sat through a group discussion with a member of the health team is much more likely to seek medical aid when needed than one who knows no one in the medical department. The ease of communication in the first situation foretells the feeling tone which the employee will experience when he moves over to the role of patient. A discussion of the topic chosen by the group allows everyone to verbalize his feelings, his anxieties, his gaps in knowledge, his complaints. Whatever he says, as a member of the group, is heard, accepted, considered, and reviewed. Being listened to

by his peers and the educator creates a good feeling, and through this sense of participation in a medical subject, he is brought closer to the essence of the medical mission in industry. Not only is this desirable for him, but with a positive attitude generated in him, he will serve frequently as an unofficial public relations representative of the health service, and thus aid in the broader acceptance of the preventive medical program in general.

In any discussion structure there is equity among all participants, and the material under consideration becomes a part of each member, for he has aided in the formulation of the ultimate plan of action. This is much more acceptable to him than were the same content lectured to him or talked to him. He assisted in its birth and will not disclaim or discredit something in whose creation he assisted. This method fits the instruction of 17th-century Comenius when he wrote "Let the purpose of this, our dialectic, be to discover and use a method of instruction by which teachers teach less and learners learn more."

5. *A Minimal Use of Printed Media.*—A wealth of accurate and well-presented material is available in printed form—primarily in brochures or leaflets, and secondarily and more succinctly in posters. The former have seen wide use since the beginnings of the movement in health education, and innumerable pieces are available from governmental agencies, insurance underwriters, and trade associations. Frequently these items are distributed among employees or made available in racks, and their mere disappearance has led many educators to conceive of this device as a popular medium of teaching. The premise of this brief discussion on pamphlets (and posters) is that they are good instruments when selected carefully and checked for authenticity or bias, when used sparingly, and in well-indicated situations only.

Their first value, as seen by this writer, is to back up a discussion with an employee held either in group session or individually. As an example, a worker was troubled with hemorrhoids, and following the taking of a history and conducting a physical examination, counsel was given regarding bowel habits, diet, medication, and the relationship of hemorrhoids and constipation. After using some medical drawings for clarification of the anatomic and pathologic changes involved, he was given *one*

pamphlet germane to the subject and certain sections were marked for his reading. The publication was the best of several available, had good illustrations, and was attractively printed.

On one occasion a carpenter who had sustained many digital injuries was visiting the dispensary again for a laceration of a finger. When he was called into the physician's office, it was seen that he had selected two pamphlets from the literature rack. It would have required no effort to forego comment on this action, but by doing so a valuable clue would have been missed. The physician asked the carpenter which brochures he had picked from the rack and was shown one on alcoholism and another on allergy and asthma. When the employee was asked the reason for his selecting these particular publications, he offered, without hesitation, the information that there was a drinking problem in his family—his wife, it developed—and his older child had a history of allergy. From this beginning there were effected referrals of both family members for conditions which the worker had neglected or denied for several years, or had attempted to cope with, unaided because he knew of no help available. The rapport which grew from this simple inquiry regarding pamphlets led eventually to a remarkable lowering of the man's injury record. He had been able to talk about a problem which had been troubling him for a long period of time.

Most often the first activity of a young educator is to obtain as many printed pieces as possible and make them available in strategic places. This is done, in his belief, to provide information to the uninitiate and less worldly in health knowledge. The sole criterion utilized by him, in his enthusiasm, is the number of leaflets removed, and this he equates with a subamount of health education. Were the materials read? Were they taken home? Were they used to slip under the short leg of a table? Or were they taken because of a specific interest in the conditions reviewed in the publications? The distributor has only the quantitative measure of the disappearing pamphlets and cannot interpret this as a mark of success in the dissemination of information. A plea is made for an economic use of these devices, for so often pamphlets, like posters, become part of an unseen environment as they age and their corners droop with time.

These devices are used with great and good intentions by the neophyte who, as yet, has not developed within himself the capacity to carry out his educational functions on an interpersonal basis. He shunts this responsibility onto the inanimate object, which is actually the work of another who bears no relationship to the worker-learner. In essence, this educator is asking that another take on his task of teaching, for he himself is unpossessed of these skills. Yet it is only he who knows, or should know, the needs of his plant population. In place of answering these needs with specifically designed discussions, he allows the printed materials, mass produced, to substitute for his own efforts and his own thoughts. The same step is taken frequently by the director of a new health service and in his enthusiasm for adding this segment to his program, he fills shelves, covers walls, and stuffs pockets with these same printed materials. This is no panegyric against these excellently prepared brochures and placards, but merely a plea for more prudent use of these, in more rewarding situations. As Cantor (35) has mentioned, "It is the *way* in which the teacher uses her responsibilities, her authority, and her spirit that encourages or inhibits the learner's genuine participation in the teaching-learning process." Omitted is any comment on educational tools. This feeling could serve as the educator's guiding philosophy.

6. *The Job Situation as the Springboard for General Health Education.*—The job situation is looked upon here as the worker's total life within the plant. This includes the time actually spent at work and that portion of the infrequent or recurring days when medical care is sought at the plant health facility.

The work effort and the exposure to potential health hazards will serve as the basis for educational programs oriented to the particular hazard of concern and directed toward alleviation of the anxiety associated with the exposure. From this kind of beginning there will spring other activities, sought by the personnel of the medical department. At the installation with which the writer was connected, for example, a series of talks had been arranged with the plant's union representatives. These sessions had as their objective a better understanding of injury reporting, particularly at shift change, on weekends, at night, and over holidays. The meetings were so successful that the

union committee requested additional get-togethers so that personal hygiene and vacation first aid could be discussed. This was followed in the fall by a review of the athletic injuries incurred by the company's teams.

These were topics unrelated to the job per se, but which indirectly concerned the occupational health of the personnel in light of the possibility of resulting illness absence from these extramural activities. The meetings were comfortably sequential to the initial set and pointed up the ease with which general health matters can be introduced once job-centered medical problems are discussed. Had vacation first aid and other off-work subjects been presented first, their reception might not have been so strong.

The other utilization of plant time involves the coupling of education with a medical experience. When material is offered to a group of workers in connection with a preventive activity not germane to their interests at the moment, the information is not retained, for it is out of the context of their lives at that particular time. It is difficult, also, to envision that it is being stored, as is the input in a computer, to be of value on retrieval at a later date. To be of utilizable worth, the educational offering must relate temporally and substantively to the individual.

A millright was working with a helper in moving a heavy power tool. In place of a hoist he used his hands and caught a thumb, amputating the distal half of the distal phalanx. On completion of the surgical repair, with the patient comfortable, his action was reviewed, the emotional reasons behind the disregard of precautions were identified, and all of this was discussed with him. Some of the background casually related to the injury was presented for joint consideration, and the patient was allowed to develop his own conclusions about safe behavior in the future.

A technician presenting herself for a premarital blood test was asked if she would care to review any questions she might have. This was the accepted medical department procedure in place of conducting only the serologic test. The counseling opportunity brought out some gross ignorances in need of replacement by knowledge, in addition to a wealth of fears and old wives' tales.

The discussion with the young woman was followed by a session with her husband-to-be, and a marriage was started off without some of the trauma frequently accompanying this status change.

A patient requesting care for dysmenorrhea has a much more receptive attitude to an exploration of psychogenic causes and personal neurotic needs, then, than one during a compulsory course of the health of the working woman. When headache is the chief complaint the educational opportunity is greater than when the employee is stopped in his work activity when headache-free and asked to attend a session on pain in the head. These comments point to the ideal use of *the* clinical moment—that moment when discomfiture is paramount and when contemporary investigation and removal of causative mechanisms will have future operative value.

Motivation has been discussed at length in all deliberations on health education. It has entered significantly into nearly all the areas illuminated in this presentation. Spencer (36) put it pithily when she observed that "... educators are still wrestling with the problem of squaring knowledge and action, of activating people to use the information they possess, of influencing their students to 'live up to' what they know, of closing the hiatus between behavior and belief." Motivation was viewed in this manner by Rosenstock (37) when he commented, "... health behavior is determined by the degree to which a person sees a health problem as threatening, having both serious consequences and a high probability of occurrence in his case; and by the extent to which the motivated individual believes that some one of several courses of action open to him will be effective in reducing the threat." This emphasizes the element of anxiety which, as underscored previously, exists among industrial workers, and because of its existence, every health educator at the work-site should be dedicated to its alleviation, so that the individual will be more comfortable, more effective, more productive, and healthier. This can be accomplished best through the catalytic action of the educator who uses group planning, from which derives group decision and "individual commitment to common group goals." When involved in an activity, the employee's interest is heightened and the undertaking becomes his, for his interests have fused with those of the group. With this there come a

change of attitude and a new way of doing something—in this instance a different styling in health behavior.

### *Conclusion*

Health education, an activity painted across the total spectrum of life from prenatal group teaching to counseling of senior citizens, is an important function of a preventive medical program in industry. It cannot be exercised through edict, manifesto, coercion, or systems of punishment or threat. To be successful, it must be founded upon the belief that mental health accrues when there is greater understanding of people. When the educator is sensitive to the needs of his plant's employees, is aware of the cultural health heritage of the personnel segments, and is content to walk at the slower pace of democratic action, then he will be able to effect a true change in the manner of health behavior of his employee-learner. This would be a behavior characterized by a sense of anticipation, a respect for anxiety, a regard for the richness of an illness- or accident-free life pattern, and a concern for the well-being of his family in addition to that of himself. The educator has limitless opportunities to undergo personal growth in industry as he brings enlightenment through joint action with worker groups. It is accomplished with difficulty, for as Paul (38) has stated it well, "The great challenge is to find ways of weaving the discoveries of science into the fabric of daily living. This is a task in community education, or more accurately, of reeducation."

### *References*

1. "The functions of occupational health services . . . will include in particular the following: . . . k. education of the personnel of the undertaking in health and hygiene." ILO recommendation concerning occupational health services in places of employment. *Occup. Safety & Health*, 9:173, (October-December), 1959.
2. "The functions of an occupational health service are as follows: . . . 15. Arranging and carrying out Health Education Programs." *The Functions of an Occupational Health Service in an Industrial Organization*. Association of Industrial Medical Officers, London, (September) 1956, p. 5.
3. "An occupational health program should promote the education of employees in matters of personal hygiene and health and encourage the use of safeguards provided to protect against any hazards to health which may be inherent in their jobs. The most favorable opportunities for carrying on health education

and counseling will be afforded during visits to health facilities and through periodic inspections of the employee's place of work." Scope, objectives, and functions of occupational health programs. *J.A.M.A.*, 164: 1104, (July 6) 1957.

4. "Conduct programs for the education of workers and the public in the prevention of occupational disease and community nuisance." Industrial hygiene—definition, scope, function and organization. A statement prepared by an ad hoc committee and approved by officers and board of directors of the American Industrial Hygiene Association. *Am. Indust. Hyg. A.J.*, 20: 428, (October) 1959.
5. Plummer, N., and Winkler, L. E., Jr.: Sickness absenteeism. *A.M.A. Arch. Indust. Health*, 11: 218, (March) 1955.
6. Health Statistics from the U.S. National Health Survey: *Preliminary Report on Disability. United States, July-September 1957*. Public Health Service, U.S. Department of Health, Education, and Welfare, Washington, (June) 1958, p. 5. (Public Health Service Series B-4.)
7. Expert Committee on Health Education of the Public: *First Report* (Technical Report Series No. 89). Geneva, WHO, (October) 1954, p. 8.
8. Hiscock, I. V.: *Ways to Community Health Education*. The Commonwealth Fund, New York, 1939, p. 2.
9. Gebhard, B.: The industrial nurse in health education. *Am. J. Nursing*, 49: 368, (June) 1949.
10. Skinner, Mary Lou, and Derryberry, M.: *Health education for outpatients*. *Public Health Reports*, 69: 1107, (November) 1954.
11. Harnett, A. L., and Shaw, J. H.: *Effective School Health Education*. Appleton-Century-Crofts, Inc., New York, 1959.
12. What is health education? Symposium. *Am. J. Pub. Health*, 37: 641, (June) 1947.
13. Wilson, C. C.: *School Health Services. A report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association with the cooperation of contributors and consultants*. National Education Association and American Medical Association, Washington, 1953, p. 159.
14. Galdston, I.: Motivation in Health Education. *Am. J. Pub. Health*, 39: 1276, (October) 1949.
15. Pritchard, Elizabeth G.: Workers' health education. *Am. J. Pub. Health*, 32: 395, (April) 1942.
16. Owen, Helen L.: Industrial nurse as health educator. *Pub. Health Nursing*, 37: 567, (November) 1943.
17. Felton, J. S.: Army industrial medical program at a port of embarkation. *Indust. Med.*, 14: 854, (November) 1945.
18. Boxer, J. I.: The penny plan for health education in industry. *Am. J. Pub. Health*, 36: 1143, (October) 1946.
19. Robinson, Cornelia: A pilot study, *Nursing World*, 128: 21, (November) 1954. *We're in This Business Together—Atlanta Plant Participates in Health Education Study*. Reprinted from house publication of Cluett, Peabody Co., Inc., 1954.

20. Lanier, J. L.: Health of employees is top consideration. *The Westpointer*, 5: 1, (April) 1958. Valley conducts model cancer program. *Idem.* 5: 3; "Just by Chance" filmed here. *Idem.* 5: 7.
21. Ellerson, H. W., Jr.: Why a health education program? *Safety Maint.*, 115: 34, (June) 1958.
22. Stone, R. (ed.). *Industrial Medicine in the Plutonium Project—Survey and Collected Papers* (National Nuclear Energy Series—Manhattan Project Technical Section. Division IV—Plutonium Project Record, Vol. 20). McGraw-Hill Book Co., Inc., New York, 1951.
23. Felton, J. S.: The unusual in industrial health at an atomic energy research laboratory. *Mississippi Valley M.J.*, 72: 23, (January) 1950.
24. Felton, J. S.: Health education in industry. *Nursing World*, 125: 32, (January) 1951.
25. Felton, J. S.: Health education at an atomic energy research laboratory. *Health Educ. J.*, 10: 53, (April) 1952.
26. Branchini, C.: Health education for industrial employees at the Hanford atomic products operation. *Pub. Health Rep.*, 69: 883, (September) 1954.
27. Employee Health Programs. *The Carbide News*, 20: 15, (May) 1953.
28. Young, Marjorie A. C.: *A Study of Health Education Programs in Massachusetts Industries*. Health Education Unit, Department of Public Health Practice, Harvard School of Public Health, Boston, (February) 1957, pp. 23-24.
29. Hazen, Mary Denaro; Roberts, Beryl; and Young, Marjorie, A. C.: *Health Education in the Industrial Setting—A Report of a Long-Term Community Project*. Health Education Unit, Department of Public Health Practice, Harvard School of Public Health, Boston, (October) 1958.
30. Sexton, R. J.: Health education for employees—utilization of one of the methods of health education and its application to employees of a chemical plant. *A.M.A. Arch Indust. Health*, 20: 303, (October) 1959.
31. Hamilton, Alice: *Exploring the Dangerous Trades*. Little, Brown & Co., Boston, 1953, pp. 125-126.
32. *Manual for Safe Handling of High Boiling Oils From Catalytic Cracking*. Esso Standard Oil Co., New York, (March) 1951 (rev.), p. 3.
33. Koekebakker, J.: Mental health implications of health education. *Pub. Health Rep.*, 69: 958, (October) 1954.
34. Klapper, J. T.: The comparative effects of the various Media, in Schramm, W. (ed): *The Process and Effects of Mass Communication*. University of Illinois Press, Urbana, 1955, p. 105.
35. Cantor, N.: *The Teaching-Learning Process*. The Dryden Press, New York, 1953, pp. 33-34.
36. Spencer, Mary E.: An educator talks about motivating people. *J. Am. Dietetic A.*, 25: 209, (March) 1949.
37. Rosenstock, I. M.: What research in motivation suggests for public health. *Am. J. Pub. Health*, 50: 295, (March) 1960.
38. Paul, B. D. (ed.), with collaboration of Miller, W. B. *Health Culture and Community*. Russell Sage Foundation, New York, 1955, p. 4.

### Bibliography

1. Evans, W. A.: Health education in industry. *J. Indust. Hyg.*, 1:397, (December) 1919.
2. Galdston, I.: Debunking health education. *J.A.M.A.*, 91: 1055, (October 6) 1928.
3. Galdston, I.: The Psychologic Factors of Health Education. *Am. J. Pub. Health*, 26: 171, (February) 1936.
4. *Health Education on the Industrial Front*. The 1942 Health Education Conference of the New York Academy of Medicine. Columbia University Press, New York, 1943.
5. Perkins, Elna I.: Health education for industrial workers. *Industry*, 8: 31, (June) 1943.
6. McMichael, Joan K.: Health education in industry. *Health Educ. J.*, 2: 54, (April) 1944.
7. Calver, H. N.: Resources of industry for health education. *Am. J. Pub. Health*, 34: 489, (May) 1944.
8. Gatto, F. M.: Health education in industry. *Indust. Med.*, 14: 192, (March) 1945.
9. Frank, L. K.: Health education. *Am. J. Pub. Health*, 36: 357, (April) 1946.
10. *Motivation in Health Education*. The 1947 Health Education Conference of the New York Academy of Medicine. Columbia University Press, New York, 1948.
11. Galdston, I.: Motivation in health education. *J. Am. Dietetic A.*, 25: 745, (September) 1949.
12. Galdston, I.: Motivation in health education. *Am. J. Pub. Health*, 39: 1276, (October) 1949.
13. Paterson, R. G.: *Foundations of Community Health Education*. McGraw-Hill Book Co., Inc., New York, 1950, ch. 17 (Health Education), pp. 252-263.
14. Stoves, Vera: Health education in industry. *J. Indust. Nurses*, 2: 167, (Autumn) 1950.
15. Brent, Hilda: How health education can be promoted in a small plant. *Nursing World*, 74: 526, (November) 1950.
16. Research in health education in industry. Special Report. *A.M.A. Arch. Indust. Hyg. & Occup. Med.*, 4: 61, (August) 1951.
17. Malan, R. M.: Philosophy of health education. *Health Educ. J.*, 11: 31, (April) 1953.
18. Heinz, Irma C.: Health teaching for employees. *Nursing Outlook*, 3: 340, (June) 1955.
19. Shepard, W. P.: Experiences in communication and persuasion in the area of health. *Indust. Med. & Surg.*, 25: 266, (June) 1956.
20. Bravo, A. L.: Health education in industry. *Intern. J. Health Educ.*, 1: 16, (January) 1958.
21. Lifson, S. S.: Health education in industry—practical considerations for actual programs in industry. *Am. J. Pub. Health*, 49: 1357, (October) 1959.

22. Warshaw, L. J., and Hafferberg, Rose G.: Health education in industry, Warshaw, L. J. (ed.): *The Heart in Industry*. Paul B. Hoeber, Inc., New York, 1960, pp. 630-650.
23. Maisel, A. Q. (ed.): *The Health of People Who Work*. The National Health Council, New York, 1960, ch. 8, pp. 143-157.

## HEALTH EDUCATION APPLIED TO MANAGEMENT AND LABOR UNIONS

William A. Sawyer, M.D., Medical Consultant,  
International Association of Machinists\*

IN CONSIDERING the health of workers and the role played by health education, we are inevitably brought face to face with preventive medicine in its broadest application. The very essence of health education is preventive medicine; the two phrases can often be used synonymously. The full role for all of us who are engaged in health education is just this—to *prevent* ill health from developing, to *prevent* diseases from worsening, to *prevent* the worker's total disability or discouragement even in the face of ill health, and to *prevent* sickness absenteeism. And so, just as the physician should ideally approach his task in this fashion so should a health education program instruct and counsel in this same fashion.

There seems to be good general agreement about the desirability of preventive medicine. But in some cases it does not get beyond lip service, or perhaps beyond a scrambling around among several approaches in the hope that some degree of preventive education will result. The point for which we must search, then, is education not simply for its own sake, but for its translation into continuing action. This is the end product of all education, this translation into action, and it might well be our standard for appraisal of any health education program.

Perhaps the first and most vital part of any health education program is the individual's concept of what constitutes good health. And a corollary to this, of course, is his acceptance of this concept and his willingness or motivation to do something about it. Other factors which can help to complete the picture are the variety of community resources available for health. If we could start with such a background, then when the worker picks up a pamphlet on cancer, heart disease, or mental illness, or when he sees a poster or is instructed on an environmental hazard, it will have real meaning to him.

\*Proceedings: 13th International Congress on Occupational Health, July 25-29, 1960, New York, pp. 438-441.

The individual's concept of health at best involves a full and philosophical approach to life and a pattern of healthful living, rather than a series of separate wishes to be cured of individual diseases and disabilities.

This philosophical approach has been described in many ways. The Constitution of the World Health Organization, for example, states that "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity." In the mid-nineteenth century, Benjamin Disraeli was telling the British Government. "The health of the people is really the foundation upon which all their happiness and all their powers as a state depend."

These are possible concepts of health, then that can transcend the more limited approaches so prevalent in our society. Somehow these concepts can be brought to the worker—whether it is through an inspiring speech, a meaningful relationship with his own doctor, or his participation in developing an effective labor health committee in his plant. Somehow the maintenance of good health now sought by parents for their children must be sought by adults for themselves. Somehow our concept of good pediatric care must be extended into good lifelong medical care with an increased motivation and sense of responsibility on the part of each individual.

I feel certain that unless health education is tied to an effective health and welfare program or at least to an effective philosophy, it can offer only small and temporary benefit. To make the transition from the philosophical to the practical, I would like to mention a few experiments in health education. Some are statewide or communitywide, some involve groups of participating firms, and one is an in-plant program. All of them have much to offer.

I was struck by the title of a recent article in one of our medical journals which described the occupational health program undertaken by the State of Georgia (1). It was called "To Each His Own." In further explanation of the title, the author Dr. Lester Petrie, of the Georgia Department of Public Health, stated that it was their belief that: "each individual has his own responsibilities and his own rewards. This applies to each employer, to each employee, and to each profession. It also

applies to each organization, whether governmental or private enterprise. To each his own responsibilities and to each his own rewards." This premise, this motivation toward individual responsibility for health seems to me a very sound basis for health education.

As a result of a pioneering experience in voluntary multiple tests health screening of about 1½ million people, the State of Georgia was able to reach some important conclusions about the health care of its people. It was able to estimate that not over 10 percent of their people are under regular professional health supervision; the other 90 percent never seek medical health supervision but visit a physician only for sickness or injury. It was felt, then, that the best answer for this 90 percent was a health education program which teaches three things: (a) the inescapable responsibility of each individual for his own health, (b) the limitations of his own resources, and (c) the community resources available to help him.

When I speak of individual responsibility, I refer to personal initiative in seeking better health. I am not considering individual financial responsibility in this paper.

The State of Georgia began by setting up a State employees' health service, primarily to teach these three basic principles of health education to all 24,000 employees of the State government. This educational program is accomplished through three media: (a) multiphasic health screening tests, (b) counseling in health problems, and (c) first aid and emergency services.

Finally, the State of Georgia has tried to assess the economic importance of its health education program. It is estimated that the health service would have to reduce sick leave by only 10½ minutes of every 100 man-hours worked to offset the cost of the service. Another important economic observation is the obvious one that a sick population cannot compete successfully with a healthy population in the production of wealth. And so we find a stimulating "bootstrap operation" in one of our less healthy and less wealthy States which can surely serve as a helpful example to many other parts of our country as well as to many of the underdeveloped countries in the world.

One community program of especial interest is that of the Industrial Health Council of Birmingham, Alabama (2), an organization of private industrial and business concerns whose goal was to somehow improve the situation in small industries and establishments, which obviously failed to share equitably in the health benefits available to those employed in the larger industries.

At this point, I think we should pause and establish an important fact. When we speak about small industries, we are talking about more than 75 percent of our working force, which has little or no industrial medical care—those persons employed in plants with fewer than 1,000 employees and those employed in agriculture, in mining and quarrying, in construction, in wholesale and retail trade, and, to some extent, in transportation, finance, service, and government. It is helpful to look at the examples of good industrial health education and care furnished by our major industries, but we must bear in mind that these programs are available to only a minority of our population, and, even though they are stimulating examples, they do not apply to the majority of our people who work in the smaller trades and industries.

The Industrial Health Council of Birmingham, Alabama, considered this deficit in health programs for small plants as its primary task. The council was inaugurated with a charter membership of nine firms in 1947, and by 1958 its membership included 166 firms, with a total of 17,302 individual employees. The heart of the program and its appeal to employer and employee alike lie in the preventive medicine feature of the multiphasic screening tests. Employee participation is voluntary. The tests are performed during working hours in appropriately equipped buses which follow a regular schedule in visiting member plants. Each plant is also encouraged to develop a sound occupational health program. The cost of the council program to member firms is \$3.65 per employee surveyed, although this figure may have to be increased somewhat. This program provides what seems to be the cardinal need in health education—that is, to teach the individual his responsibility for maintaining his own health and then to help him find the means to fulfill this responsibility.

Another long-term community project with important results for other communities is that of the Cambridge Industrial Health Information Service (3). This industrial health education project grew out of the joint interest of the Health Education Committee of the Cambridge Community Services—a Red Feather agency—and the Massachusetts Public Health Association. In 1955 the project formally became the Cambridge Industrial Health Information Service, with full-time service of a qualified health educator. Its purpose was to combine research with service in health education, and to coordinate and develop health education services available to industry. This effort was extended to 16 companies.

Another example of this approach, and one with which I am closely acquainted, is that of the Health Association of Rochester and Monroe County (4), which some years ago took the lead in that community in creating an Occupational Health Education Committee. This committee's membership includes representatives from the county medical society, industrial physicians, industrial nurses, an insurance company, industrial editors, industrial relations personnel, labor unions, and the Chamber of Commerce. The committee's first work was to send a questionnaire and a letter to the presidents of a random sampling of 100 local small industrial establishments, to learn about their current health education practices as well as of their interest in developing health education programs. This brought a large response, both in interest and in unanticipated problems, which in turn led to the development of an active consultation service, which has come to have an unexpectedly important place in the program. On request, members of the committee will meet with management of any industry or business concern and make recommendations to them on matters pertaining to employee health tailored to suit the individual company's needs.

Until now we have been considering state or community programs geared to industrial health education. It is time to look also at what labor and management have done on their own initiative. I have had the opportunity to participate in health education programs from both directions—labor and management—and both have proved to be gratifying and enlightening experiences. The program with which I am now most closely

involved of course, is that of the International Association of Machinists, for which I am Medical Consultant. Before I began writing a column for their weekly paper, I received a letter from a machinist telling me of the great problem they had been having with dermatitis in his shop, apparently due to working with diesel engines. I had had no previous contact with diesel motor problems and resultant dermatitis, but began looking into the matter. The result was not only a reply to the man, but one of the first columns for the paper. This evoked such a large response that it led to a pamphlet on occupational dermatitis in general, which was promptly requested by more than 15,000 persons. Now, 5 years later, requests for the pamphlet are still coming in. The point of this story is that health education can begin anywhere if it is geared to the *needs* of the people. Perhaps a specific start with an immediate problem is more fruitful than a broad approach. The expansion and direction can be shaped by the people whom the program serves.

Moving from programs initiated by labor to programs initiated by management, I would like to bring you an example from a small plant, since small plants present the greatest unmet need and therefore our greatest opportunity for health education. The Rome Cable Corporation (5), which employs some 1,250 persons, is in upstate New York. The Medical Director of this company has approached his task with the thought that of prime importance in an occupational health program is the dignity of the individual employee and his cooperation and interest in maintaining his health at an optimum level. It is an outstanding example of how, through the vision and interest of the Medical Director, a health maintenance program can carry with it the highest level of health education at the same time.

Sometimes it is well to look back not only to see what ground has been gained but also to remind ourselves of where we desire to go. Ten years ago, at the Ninth Annual Congress on Industrial Health, a committee was appointed to explore needed research on health education in industry; to plan studies on content and type of programs, materials, and methods of evaluation; and to suggest practical means for carrying out these studies. This committee consisted of 14 experts in the fields of industrial hygiene, management, labor, health education, social psychology, industrial

relations, group dynamics, and biostatistics. As a result of their brainstorming sessions on the topic, they outlined a broad framework for research on health education in industry, published in 1951 (6). Apparently little or no action came from this survey, but it remains today an excellent plan for future actions.

In conclusion, I would like simply to emphasize the fact that the key-word to all that has been said and written about the topic of health education seems to be motivation. This surely is the question behind all of the other questions that we are considering here. To quote Dr. A. C. McGuinness of the U.S. Department of Health, Education, and Welfare (7): "All the scientific knowledge, manpower, and financial resources in the world cannot force health measures on people. They must be motivated to seek them out and to accept them. . . . It all rests, of course, on something called communication."

Mr. S. S. Lifson of the National Tuberculosis Association has put it this way (8): "How to educate the adult for healthful living is a complex and difficult problem. Solutions will undoubtedly be found, but it will take considerable experimentation and thought on the part of a large number of agencies and groups. Although medical science has made tremendous strides, the full benefit of these remarkable advances will not come to flower until each of us has been educated to know and practice the rules by which we can carry out our responsibility for our own health, that of our families, and that of the community."

And Dr. Edward Stieglitz said (9): "Individual health construction is impossible unless the patient takes the initiative in seeking guidance, cooperates fully with the physician, and is willing to expend effort on his own behalf."

And so the motivation principle is stated and restated. Part of our task here is to adapt this principle to health education for all. Somehow a working group can be stimulated and aided to look into its own problems, be they environmental health in the working place or family health matters in the home. Through his working group a man can learn that he can plan for his own health care, that the old feeling of being subject to the whims of fate no longer pertains, and that a wide variety of community services is at hand for serving his needs.

Such a concept of health education offers an exciting task indeed!

### References

1. Petrie, Lester M.: To each his own: a State occupational health program. *Am. J. Public Health*, 49: 1658, (December) 1959.
2. Smelo, Leon: The Birmingham Industrial Council: s role in the health program of small plants. *Indust. Med. & Surg.*, 28: 341, (July) 1959.
3. Hazen, Mary Denaro; Roberts, Beryl J.; and Young, Marjorie, A. C.: *Health Education in the Industrial Setting: A Report of a Long-Term Community Project*. Harvard School of Public Health, (October) 1958.
4. Unpublished material. Health Association of Rochester and Monroe County.
5. Fraser, A. D. R.: The value of medium sized and small plant health programs to management. *Indust. Med. & Surg.*, 27: 321, (July) 1958.
6. Research on health education in industry: special report. *Arch. Indust. Hygiene & Occup. Med.*, 4: 161, (August) 1951.
7. McGuinness, Aims. C.: The importance of public education for health on the world scene. *Am. J. Public Health*, 47: 339, (March) 1959.
8. Lifson, S. S.: Health education in industry—practical considerations for actual programs in industry. *Am. J. Public Health*, 49: 1357, (October) 1959.
9. Stieglitz, Edward J.: *A Future for Preventive Medicine* (Studies of the New York Academy of Medicine Committee on Medicine and the Changing Order). The Commonwealth Fund, New York, 1945, p. 67.

# PART TWO

## STUDIES AND DEMONSTRATIONS ON HEALTH EDUCATION OF WORKERS

### 1. HARVARD SCHOOL OF PUBLIC HEALTH FIVE STUDIES IN INDUSTRIAL HEALTH EDUCATION

---

STUDIES IN INDUSTRIAL health education were planned several years ago by the Harvard University School of Public Health. Three of the studies have been completed, one is in progress, and another has been projected.

A. *The first project*, carried out in 1956, in 25 sample plants was a status study of health education in Massachusetts industries.

Health education activities, except those related to industrial hazards, had little interest for management or labor. Activities related to some type of medical or preventive service, such as a chest X-ray program had more appeal than general health education. Efforts that required less time and effort were used more frequently than films, group discussions, etc. The multiplicity of voluntary health agencies, each with its own fund-raising drives and programs, created negative attitudes in management and union groups. Where agencies were able to carry out educational programs, they did so without objectively planned evaluation. Health education in industry can assume the importance that safety education has evoked only if activities and programs are modified in methodology and in content and are grounded in the principles of the behavioral sciences. (See *A Study of Health Education Programs in Massachusetts Industries.*)

B. *The second study* carried out was an attempt to develop a coordinated approach to health education in industry utilizing all existing official and voluntary agency resources and providing these health education services through a "filter" person. This action-with-research project became known as the Cambridge Industrial Health Information Service and was directed by a full-time program coordinator. This trained health educator worked

with Harvard consultants, health agency workers, and industrial representatives.

Community health agencies were willing to coordinate their activities as long as each retained its identity and stressed its own special health problems. Agencies did not always follow up a special problem health program with a generalized health education program, chiefly because of time limitations. Coordination must satisfy agency needs, but also must provide the worker time for involvement in programs additional to those of special concern to the agency. This study shows that planning coordination is easier than actual operational coordination.

Management will generally accept programs that go no further than pamphlets and posters. However, the presence of the coordinator made more companies choose sounder programs than they would otherwise; one-third of the plants developed a group discussion and speaker program. In general, in-plant committees were nonexistent, and management did not approve of their formation. In fact, only a few plants were willing to assess the health needs and desires of their employees. Industrial nurses and personnel directors generally were interested only in absenteeism, production costs, and costs of insurance. Conferences with these groups were helpful, and regularity of contact with management was needed to prevent lags in developing the program. Studies were recommended that will find patterns of health education appropriate to the industrial setting and ways of influencing management favorably concerning the potentials of employee-management planning. (See *Health Education in the Industrial Setting*.)

C. *The third study* carried out was an effort to determine whether there is any correlation between variously rated in-plant health service programs and accuracy of worker information on health and illness, in favorable attitudes toward health and medical care, and in purposeful actions to protect health. A study of plants with high-rated, middle-rated, and low-rated health service programs did not prove this hypothesis. Despite the use of educational material in the plants and a demonstrated worker exposure to educational efforts, there was no modification in worker attitude or information. Apparently, health practices the workers had been informed of were adopted only when the

corresponding health services were available within the plant. (See *A Study of Health Education in Industry*.)

D. *The fourth study*, now in progress, is an effort to ascertain whether health education programs will be more effective if they are based in the labor unions. The study is being conducted by the Medical Foundation of Boston. An important aspect of the program will be the determination of the most successful modes of program operation. The demonstration will be carried out in six unions, with three used as controls, for a 3-year period. The specific objectives of the program, the methodology, the exact geographic locations to be covered, the general assignment of program priorities, and evaluation of the project, will be spelled out by an eight-man union foundation advisory committee.

E. *The fifth project* has been visualized as an effort to base the health education program in a local health department which would provide generalized health education services on a planned basis to all segments of the community. This study has not been formalized as yet.

A. Excerpt from: Young, Marjorie A. C. *A Study of Health Education Programs in Massachusetts Industries*, Harvard School of Public Health, February 1957.

#### *Major Conclusions*

1. The most patent conclusion that can be drawn from this study of health education programs in twenty-five sample plants is that in-plant health education activities of the kinds currently offered by community agencies had very low interest and appeal to both management and union personnel.

2. Health education activities related to industrial hazards were readily accepted by management, but these were not the kinds of activities proffered by the community agencies in contact with the sample plants.

3. The presence of full-time in-plant nursing service facilitated the effectuation of health education activities related to industrially induced injuries and infections, but not necessarily of general in-plant health education programs.

4. Health education activities that were an integral part of some type of medical or preventive service, such as a chest x-ray program, were more readily accepted than those of a more general nature: the service was the desired element that facilitated entree of the associated health education activities.

5. The chief barrier identified by agency, union, and management personnel can be grouped into six major categories, as follows: time factors; worker attitudes; agency attitudes, organization, and administration; management attitudes; materials and methods of health education; and the plant and its operation.

6. Health education media and methods that require little time, effort, space, and minimal interruption of plant organization and routines (e.g., pamphlets and posters) were utilized more frequently than media and methods requiring in-plant time, space, and changes in routine (e.g., films and group discussions).

7. The multiplicity of voluntary health agencies, with their separate fund-raising campaigns and programs, constituted a major barrier to acceptance of in-plant health education activities and created highly charged negative attitudes in a majority of management and union respondents. The need for interagency co-operation in planning and carrying out in-plant health education activities was vocalized repeatedly not only by management personnel but by agency representatives themselves. However, the latter were not very hopeful about the possibilities of making progress in this desirable direction owing to interagency competition, professional jealousies, and personality conflicts.

8. The lack of worker interest in general health promotion was perceived to be a major barrier to in-plant health education by all three respondent groups. Since this has been a widely recognized fact for many years, it seems illogical for the professional members of health agency staffs to attempt to superimpose their activities upon industrial groups without first assessing plant health needs and worker interests, needs, values, and backgrounds.

9. There was no objectively planned evaluation of the health education activities carried on in plants under the sponsorship of health agencies. To evaluate the effectiveness of such programs, goals must be clearly defined in advance and objective criteria must be established. Agencies did not formulate either

definite goals or evaluative criteria, but rather proceeded on the basis that the larger the number of plants contacted and the greater the quantity of materials distributed, the better the agency program.

10. Although many authorities have advocated the development of in-plant general health education programs, a considerable number of agency, management, and union personnel doubted the advisability and efficacy of this approach. There was considerable agreement among the interviewees from all three respondent groups that the in-plant environment is not conducive, physically or psychologically, to effective health education and that general health education programs could be focused to much better advantage on out-plant community groups.

Health education appropriate to the needs of plants and their workers is needed and wanted. The comments and suggestions provided by the workers, management and agency personnel involved in this study can be used very effectively in stimulating health workers to reexamine their educational philosophies, programs, and materials. The challenge extended to us as health workers is to evaluate all our activities constantly in terms of over-all plant problems and procedures and workers' interests, needs, backgrounds, values and goals. We shall probably need to channel more of our professional effort into assisting plants to develop health education programs realistically tailored to their needs, interests and operational possibilities. In this process we may have to change some of our own ideas and operating procedures but with resulting positive changes in agency acceptance and in program efficiency and effectiveness.

B. Excerpt from: Hazen, Mary Denaro; Roberts, Beryl J.; and Young, Marjorie A. C. *Health Education in the Industrial Setting, A Report of a Long-Term Community Project*. Harvard School of Public Health, October 1958.

#### CHAPTER V—SUMMARY

Reported herein are the successes and failures experienced in industrial health education in Cambridge, Massachusetts, over a period of about eight years. The project which is described was part of the work of the Health Education Committee of Cambridge Community Services during the first five years, with health

educators of community agencies assisting on a part-time basis. In the last two and one half years the project became an action-with-research one known as Cambridge Industrial Health Information Service under the full-time direction of a program coordinator, who was a trained health educator. The coordinator worked with guidance from the Health Education Committee and an Advisory Subcommittee of industrialists, health agency workers and consultants from the Harvard School of Public Health. CIHIS was supported during the two and one half years of its existence by a grant from the Harvard School of Public Health and a Greater Boston foundation. Space, heat, and light were supplied by a local firm, and the City Health Department and other health agencies contributed educational materials.

As a committee venture, the project was confined to four companies, owing to limitations imposed by lack of staff time. Later, after CIHIS was organized, the number of companies was extended to 16. Although thought was given to further expansion of the program, each discussion about this led to the conclusion that the work should be relatively limited in order that all efforts toward the project objectives could be carefully thought through and well documented.

The two main objectives of both the earlier and later phases of the Cambridge project relate (1) to the coordination of agency health education services to industry, and (2) to the exploration of patterns of health education that would be practical in the industrial setting. The more significant findings are summarized briefly here with reference to these two main objectives. More detailed summaries appear in preceding appropriate sections.

#### *Coordination*

It appears from this study that community health agencies wish to coordinate their health education services to industry. At the same time, they feel that they must identify their separate agencies in industry and promulgate programs organized around their special health areas. These needs are undoubtedly related to agency fund raising efforts and also to the usual pattern in this country of structuring agencies around special health problems.

The desire for coordination and the needs indicated above may conflict unless the scheme of coordination permits agencies to maintain both identity and special programs. Coordination by means of one health education coordinator as tried in this study did not always satisfy agency needs to the degree that effective coordination of services to industry was possible. It can be said, however, that the plan of coordination used in the Cambridge project was somewhat successful and that a limited measure of coordination was achieved.

It appears that agencies did not often evolve a generalized approach to health education as a follow-up of the specific programs on which they had approached industry. This was not due to a lack of interest in or desire for the more comprehensive program; rather, it was due chiefly to time limitations, and also to the need to give priority to agency interests in special fields. There was agreement at the verbal and planning level that all agencies in the project would endeavor to bring companies with which they were working into the coordinated program and that they would build from programs centered around the health problem areas of specific concern to them to health education in other areas. Time limitations appear to have interfered with the translation of these verbal agreements into action in agency work; health workers presumably did not have the time to guide companies and plants into programs beyond those to which their agencies had committed their interests.

After a full-time coordinator came into the CIHIS, the number of plants accepting and receiving the coordinated services increased. However, the agencies were not better coordinated, pointing up the fact that the provision of a full-time coordinator in itself will not always produce coordination. The plan of coordination must satisfy agency interests and needs as well as provide worker time for involvement in programs additional to those of special concern to the agency. Experience in this project suggest that coordination at the level of joint action is not so easy of attainment as is coordination at the planning level. It indicates that to assure deep and lasting coordination, any contemplated plan must be studied carefully before it is tried by all agencies to be involved in order to ascertain whether it meets their needs with respect to agency identity and special interests.

Even after lengthy and serious consideration, a plan of coordination may not prove to be effective because only after the coordinating process is under way and on trial will the real difficulties associated with a submerging of agency interests be brought to light.

The response of industrialists to the earlier stage of the Cambridge project and the support given for a continuation of the project into the CIHIS stage provide evidence that the idea of coordinated planning as tried here is approved by industry. This is also seen repeatedly in the response and personal comments of industrialists on the CIHIS Advisory Committee.

#### *Program Patterns*

No single pattern in the Cambridge project appeared as the most desirable organization of health education activities in industry. Programs ranged from the pamphlet-poster type to those that utilized speakers and allowed for group discussions. This study showed that management generally will accept health education service, especially that limited to pamphlets and posters. This type of mass approach is relatively easy to establish on a regular basis, whereas deeper, educationally sound approaches using personalized methods are difficult to set up. The latter type was adopted in about one-third of the contacts made. Even so, it is patent that the most intensive of the Cambridge programs leaves much to be desired in terms of what is educationally sound. Important variables such as management interest in health and its knowledge of how education relates to it, management understanding of educational methods, the availability of employee time and physical facilities, enter into company discussions on whether they will accept coordinated agency services in health education and, if so, what methods of education they will utilize.

It is true that under the guidance of a full-time coordinator, as compared with part-time workers, a greater number of educationally sound industrial programs were built and more companies were involved in regular, periodic health education for their employees. About one-third of the companies accepted the speaker-discussion type program, and some plants originally

not especially interested in such programs tended toward this after they had worked with the coordinator.

Much is already known about the comparative effectiveness of educational methods and media, but it would seem desirable to study methods that have been used in and are most fitting to industry in order to learn whether they are actually influencing workers' attitudes and behavior in health. Are pamphlet-poster programs effective? Are other more personalized programs effective in their educational results and, if so, do they reach a sufficient number of people to warrant the time and effort of both companies and agencies?

It was thought in the beginning, and especially in the CIHIS phase of the project, that in-plant committees would increase the effectiveness of the health education programs in industry. To a greater degree than programs planned by project coordinator and management, presumably, they would bring about worker participation in planning, arrange programs that would appeal in method and topic, and relate health education to worker interests and needs. It turned out that in-plant health committees were nonexistent and almost impossible to establish because management generally did not wish additional committees. Sometimes the coordinator could function through a safety or a health and safety committee already organized within a plant. Sometimes a safety committee extended its work to include health, though this was rare. It would seem useful to explore more fully in the future the potential for employee-management planning in order to determine whether existing committee structures might be utilized in health education programs to a greater degree than was possible in this project. From a philosophic standpoint, it is highly desirable to find a practical system whereby employees can be involved in planning programs such as health education, but such a system must have management support and approval and fit into the operational plans and objectives of industry.

In the absence of in-plant committees, which it was thought could relate programs to employee values and needs, the coordinator, with management support, endeavored to explore employee needs directly. It was found that about twenty-five

percent of the plants in the project were willing to undertake such studies. No plant had assessed its health needs on its own.

Industry requires many contacts and extended time before health education services are accepted. Personal contacts appear important. An average lag of about three months was found in Cambridge between first contact with a plant and actual program development—and regularity and continuity of contacts were revealed as essential. This all suggests that considerable staff time is involved in interpreting health education, creating an atmosphere receptive to it, and maintaining adequate follow-up services.

Management support for health education appeared as a major variable in employee acceptance of and receptivity to health education. Where management was enthusiastic about the program, employees' reactions tended to be positive. Management is also important in the initial contacts and in fostering program planning in health education because of the absence of in-plant committees. The management contact person becomes the gate keeper for health education. An enthusiastic and positive viewpoint about health on the part of management, therefore, is worth promoting and is essential to the full development of health education in the industrial setting. Conferences with industrial nurses and with personnel directors revealed that they did not understand, generally, what health education is, but that they are concerned about production, employee absenteeism and the costs of group health insurance and that they have some responsibilities with respect to employee health. They do not see a direct relationship, however, between these concerns and responsibilities and health education. If management personnel can develop an understanding of health education and relate it to their work and company objectives realistically, then the necessary management support might evolve.

From the response to the conferences held with personnel directors and nurses, and the interest expressed in industrial health at these, it would seem that conferences of this type are a good way of developing management interest in and understanding of health education. At the same time, as in the Cambridge project, such conferences enable agency staff to increase their understanding of the objective of industry and the problems

associated with implementing health education programs. Agency workers might be involved in such conferences, therefore, to a greater degree than was the case in the trial conferences in Cambridge.

Management at the top level was involved in guiding the Cambridge project from the beginning and even more involved after the appointment of an Advisory Committee to CIHIS. This brought about valuable assistance in the development of educational services to industry and, at the same time, an increase in the understanding of health education on the part of key industrialists.

Labor as a force in the establishment of in-plant health education was not sufficiently explored in Cambridge. It is recommended that the role and interest of labor be investigated more fully in future community programs in industrial health education and that labor as well as management be brought into the community planning phases of the work as well as in planning for individual company programs.

\* \* \* \* \*

Although the Cambridge project does not give conclusive findings, it makes manifest some of the problems associated with the attainment of true coordination in community health agency programs. Even though the project was confined to industrial health education, the experience gives some clues to the difficulties encountered in coordinating any type of agency activities. The implications of the findings, however tentative, would seem to be broader than in industrial health education programs alone. The suggestions gleaned from this study might well be developed into hypotheses to be tested in more comprehensive and more formally organized research on forces favoring and obstructing coordination, since coordination is widely discussed and greatly emphasized in community work in health and other fields.

A challenge is offered to community health agencies by the fact that industry appears somewhat interested in health education and is definitely interested in employee health as it affects production, absenteeism, and group health insurance costs. Additional studies are needed now to find patterns of health education appropriate to the industrial setting and, at the same time, sound from an educational standpoint. If management support and

understanding proves to be as significant a factor in other studies as it was in the establishment of health education in Cambridge industry, ways of influencing management favorably with regard to health education must be evolved by community health agencies.

C. Excerpt from: Klerman, Lorraine Vogel. *A Study of Health Education in Industry*. Harvard School of Public Health, 1962.

#### SUMMARY

*Purpose.*—This study of selected aspects of health education within the industrial setting was focused on the hypotheses.

1. Workers in plants with high-rated health service programs will have more correct information about health and illness, more favorable attitudes toward health and medical care, and will have taken more purposeful action to protect their health than will workers in plants with low-rated health service programs.

2. Workers in plants with middle-rated health service programs will have intermediate levels of information, attitudes, and practices.

*Methods.*—First, the eight plants which met the study criteria and which agreed to participate were rated using an 80-point plant health service rating score developed for the purpose. They were easily grouped: three into the high-, three into the middle-, and two into the low-rated category.

Next, a random sample of 413 workers from these plants was chosen for interviewing. Only those meeting occupational (technical, clerical, foremen, craftsmen, operatives, and laborers) and certain other criteria were considered eligible for the study.

Finally, health information, health attitudes, and health practices scores were developed in order to compare the levels of information, attitudes, and practices among the respondents. The interview schedule had included questions on these three subjects and also on demographic characteristics, and educational influences. Each respondent was rated on each of these scores.

*Results.*—The results of the hypotheses testing were only partially in the anticipated direction, i.e., a higher percentage of the respondents in the high-rated plants had above average scores than in the low-rated plants, but the middle-rated plants frequently placed lower than the low-rated ones. These results did not reach the level of significance for the information or attitude scores, but they were significant for some of the health practices score analyses.

Since the hypotheses concerning health information and health attitudes were not confirmed and the ones concerning health practices were only partially confirmed, the remainder of the study was devoted to an investigation of the reasons for the failure of the hypotheses. A series of questions were posed within the framework of a four-stage conceptual model for the study of health education programs.

The preliminary stage of the model involved a review of the health education programs of the eight participating plants. The question posed was: Did the plants with high-rated health service programs utilize more of the techniques suitable for health education in the industrial setting than did the low-rated plants and did the middle-rated plants fall in an intermediate position? The analyses of the person-to-person, group, and mass techniques used resulted in an affirmative answer. Therefore, the hypotheses failure was not due to some error in the ranking of the plants' health education programs.

The next three stages of the model were the intermediate steps between a health education program and its long-range consequences. The first was the exposure to the program of the individuals comprising the appropriate public for the educational program. The question posed was: Were more workers reached by the potential educational elements of the health service programs in the high-rated plants than in the low-rated ones and did the middle-rated plants fall in an intermediate position? Only if there was exposure could an effect on information, attitudes, and practices be expected.

The analyses of the material concerning recency of physical examination within the plant, willingness to visit plant clinic for

advice about personal medical problems, viewing of a cancer film, and reading of health informational material provided many interesting insights into the respondent's view of the plant medical and educational programs, as well as an affirmative answer to the question. Therefore, the difficulties with the hypotheses were not due to lack of exposure to potential educational opportunities.

The second intermediate step was the favorable modification of the information and attitudes of the individuals exposed to the educational program. The question posed was: Was there favorable modification of information and attitudes by the workers who were exposed to the potential educational programs? Although some of the workers had been exposed to potential educational programs, their levels of health information, attitudes, and practices might not have been modified.

Analyses of the effect of a general tuberculosis information program, of a urinalysis testing program, and of viewing a cancer film on the answers to questions about tuberculosis, diabetes, and cancer; and of a recent plant physical examination on attitudes towards aches and pains all proved negative. Therefore, exposure to potential educational programs within the plants did not seem to have modified the respondents' information or attitudes. This probably was the reason for the failure to confirm the information and attitudes sections of the hypotheses.

The third intermediate step was the adoption of specific recommended practices by the individual exposed to the program. The question posed was: Did the worker exposed to the plant health service program adopt the practices recommended and if so why? Analyses were made separately of (1) those practices which the plant could assist the worker to adopt by providing services within the plant (physical examination within 2 years, regular physical examinations, poliomyelitis immunization, Asian influenza immunization, and chest x-ray within 3 years); and (2) those practices which the worker had to adopt independently although he might receive encouragement from plant health personnel (dental visit within the previous year, regular

dental visits, physician or clinic usually used when sick, and any physician or plant nurse consulted about all of specified symptoms). A consistently significant difference was shown in the number of respondents who performed the five plant-assisted practices between plants which offered the services necessary for these practices and those which did not offer such services. None of the four plant-independent practices was associated with any aspect of the plant health service program.

Apparently practices were adopted only when the corresponding services were available within the plant. Exposure to the plant's health education program alone did not influence the respondents to adopt the practices on their own initiative. The partial confirmation of the health practices section of the hypotheses was thus probably due to the fact that for over half of the components included in the health practices score the plants in the high-rated category were more likely to have assisted the respondents in performing the practice by providing a service than were the plants in the low-rated category. The plants in the middle-rated category had given the least assistance.

**2. PILOT INDUSTRIAL HEALTH SERVICES SURVEY, Division of Industrial Hygiene, Los Angeles County Health Department. *Industrial Hygiene News and Views*, Volume I, Number II, April-June 1960, and Volume I, Number III, July-September 1960.**

---

In 1959 the Division of Industrial Hygiene of Los Angeles County undertook a pilot study of health practices in 12 plants in the area. The survey included medical and nursing services; the use of safety committees as instruments of health education; and the status of health counseling of plant personnel.

From the study, it may be concluded that—

Management in plants with less than 350 workers does not appear to have given much thought to health education of its personnel. In most cases it has not realized what health education programs could do for the plant and needs assurance of its benefits. Generally, management appears more interested in a direct service as it involves a particular problem, and the question of introducing general health information into industry has been received with some reservation.

Management in some of the larger plants, about 250 population, has displayed interest in the evaluation of general health education material by safety committees. Many plants have such safety committees, composed of representatives of labor and management, which meet monthly to evaluate safety problems. These committees may very well be useful in evaluating the type of health education material that would be useful in industry.

### 3. NEWBURGH HEALTH EDUCATION DEMONSTRATION, National Tuberculosis Association, April 1956.

---

THE NEWBURGH HEALTH education demonstration with industrial groups was initiated in 1954 by the national and local tuberculosis associations. One professional staff member actually conducted the project. Activities were developed which could be fitted into her schedule and added to the total health education program of the association. Staff members of the National, State, and local associations met periodically to review progress and make plans. The project was undertaken to meet these objectives: to improve community health and the control of tuberculosis, to help adults realize the importance of and their responsibility for improving personal and community health, to alert the community to public health and tuberculosis control needs.

Six small factories participated; each formed its own in-plant health committee. Management gave time for members to

attend committee meetings and also allowed company time for educational program activities. All six plant committees met together to discuss and reach common understanding of the purposes of the program, to plan educational activities and fit them into the time and meeting space allotted in the factory, to work out a schedule for a series of plant meetings, to select appropriate educational materials, and to apportion responsibilities in arranging meetings and distributing materials.

Following a survey to discover the needs and desires of the employees, the committees agreed to focus on the problems of colds and of food and weight control. Original talks, flannelgraphs, and discussion questions for movies were prepared. Educational materials were hard to find—what was needed was something to interest busy employees whose first concern was earning a living. Movies were not always a possibility because of time and space. Those that ran longer than 10 minutes were impractical. A set of posters on one subject was needed to give impact and concentrated interest to the program. Experience showed that a flip-chart and flannelgraph were practical means for illustrating a talk, or for explaining the content of a movie or leaflet.

*Considerations for TB Associations.*—Working with industries is a long-term project and should be undertaken only after a realistic appraisal of demands on time and what goals are expected. Whoever undertakes this type of program must plan to spend a block of time on the program working with the planning committee and with community resources locating appropriate educational materials. Costs for the program will generally be expensive only in terms of the association's staff time required. Cost to management will be in terms of worker time spent away from the job. Experience in Newburgh reinforced the opinion that it is important for health agencies to work with employers and employees and with medical and nursing groups in exploring their interests in health education.

One of the great problems in working with plant health committees is that of planning a schedule for employee meetings. Regular meetings, brief and skillfully conducted, are essential for maintaining the interest of the group.

Through the Newburgh demonstration, a plan for developing a health education program for industrial groups was devised and tested, and a few major requisites for making such programs successful were established.

**4. GIBSON COUNTY INDUSTRY EXPERIMENTS  
WITH HEALTH EDUCATION, Etta Reid, *Indus-  
trial Hygiene News*, Industrial Hygiene Service,  
Tennessee Dept. of Health, Nashville, January 1954;  
*What's New in Industrial Nursing*, Illinois Dept. of  
Public Health, Volume V, Number 5, May 1954.**

---

THE RUTHERFORD Garment Company assisted by the Gibson County Department of Public Health in Rutherford, Tenn., initiated a 12-month experiment in general health education for its 350 employees.

The program consisted of only one meeting a month at which attendance was voluntary. This meeting was held during the last 15 minutes of the lunch hour, to which management added 15 minutes of free time for the program. The health subject was announced in advance, and the employees were invited to submit questions they wanted to have discussed. Local doctors, personnel from the local health department, industrial hygienists and other qualified speakers appeared on the programs. Management reported the programs were well received; at every program during the year, attendance was never less than two-thirds of the 350 employees.

Although no formal evaluation was made, the health department felt that the experiment had helped to create favorable attitudes and interests toward health projects, both from the point of view of management and the employees. Management planned to continue the educational program, and following the experiment employees were more interested in and responsive to community health education efforts.

5. HEALTH EDUCATION IN INDUSTRY—A PILOT STUDY, Industrial Health Council of Greater Atlanta, Inc.; Georgia Department of Public Health. Reprinted by Illinois Dept. of Public Health in *What's New in Industrial Nursing*, Volume IV, Number 2, November 1953.

---

THE INDUSTRIAL HEALTH COUNCIL, a nonprofit organization composed of members representing labor, management, and the health professions, was organized in January 1953 to sponsor and promote health education programs in industry. By working through industries, the council felt it could reach a cross section of the community.

Two industries were selected as model participants in the program. Cluett, Peabody & Co, manufacturers of Arrow shirts, employ about 1,500 workers, while Scripto, Inc., manufacturers of pens and pencils, employ about 700 workers. A professional committee made up of doctors, nurses, nutritionists, health educators, and industrial hygienists assisted in planning and carrying out the health education programs at the two plants. Each plant formed a plant health committee to assist with the program.

*Cluett, Peabody & Co.*—Five major outlets for health education were utilized at the plant. A large bulletin board in the cafeteria was stocked with literature for handouts during the lunch hour. The board was manned so that employees could ask for specific literature, ask questions, make suggestions, and consult with the health educator. Many employees took the literature home for family and community use.

Programs featuring speakers, discussions, and films were presented during the lunch hour and before and after working hours. A monthly newsletter containing health hints and information about community health services was originated for plant employees. Employees were urged to consult the health educator personally about problems and were referred to community health services. Health tests were sponsored by the plant medical department, and employees needing attention were referred to community services or their own physician.

*Scripto, Inc.*—In this smaller plant, three major outlets were introduced for the health education program. Six bulletin boards were stocked with literature for handouts. Health tests were made available from the Fulton County Health Department. A health newsletter was introduced for the employees.

In both plants, the workers' reaction was very satisfying, and various examples are cited of individual cases helped by the program. The in-plant medical personnel expressed appreciation with the program because press of other duties precluded their devoting as much time as necessary to health education and counselling.

**6. A STEP IN THE RIGHT DIRECTION (Processed).  
Dom M. Maillo, health educator with the Tuberculosis and Health Society of Wayne County, Detroit.**

---

IN 1953, under the auspices of the Tuberculosis and Health Society of Wayne County, and on the recommendation of the National Tuberculosis Association, funds were appropriated to hire a health educator and conduct demonstration health education programs in four medium-sized (150-300 employees) plants in the Detroit area.

A 1-day conference on health education was held for management and labor leaders to interest them in the pilot program.

The objectives of the program were: help each employee and his family maintain and improve their health; help the plant reduce absenteeism and turnover costs; demonstrate that health education can work in smaller plants, too.

Management first had to be shown how the program could help production and be carried out at little cost. Then a steering committee was formed for each plant composed of representatives from every department. To begin with, management allowed a half hour monthly for meetings, but the committee members soon began to meet on their own lunch hours. Through an unobtrusive questionnaire survey of the entire plant personnel, the committee determined that the major health interests were

disease prevention, personal hygiene, and safety. Because it was felt that the half hour of plant time allotted would not be adequate, the committee decided to hold evening sessions on separate health problems. Large gatherings were attracted. Cooperating health agencies of the community did much to help achieve success with the program: During the presentations, speakers, posters, films, exhibits, and literature for handouts were available.

After 18 months' experience, the health education program showed reassuring signs of effectiveness. Illustrative of its success: A company blood bank, which had been considered a failure previously, soon began to have increases in volunteer donors. TB X-ray programs increased in 1 year by 30 percent. In both cases, the change was attributed to the workers' being informed about the purposes and benefits of the programs.

**7. SPECIAL REPORT—RESEARCH ON HEALTH EDUCATION IN INDUSTRY. *AMA Archives of Industrial Hygiene and Occupational Medicine*, Volume 4, 161-165, August 1951.**

---

PURSUANT TO a resolution adopted at the Ninth Annual Congress on Industrial Health, sponsored by the American Medical Association and the U.S. Public Health Service, a committee of 14 experts in the fields of industrial hygiene, management, labor, health education, social psychology, industrial relations, group dynamics, and biostatistics met on January 30-31, 1950, to explore needed research on health education in industry.

Research was recommended in the following four broad areas.

**1. *Objectives of Programs of Health Education in Industry.***

- (a) A factfinding study and evaluation in an industrial area with a wide variety of industries and educational programs.
- (b) An evaluation of the International Ladies' Garment Workers' Program, the Fort Greene District Health Center, the Chicago Industrial Health Association, and others.

- (c) An analysis of labor and management reactions to health education.
  - (d) Initiation of various health education programs in plants based on limited procedures agreeable to labor and management to determine effectiveness of such programs.
2. *Factors Which Determine Initiation, Acceptance or Rejection of and Participation in Programs.*
- (a) Comprehensive review of prior research in fields of psychology, sociology, education, motivation, learning, and communication.
  - (b) Survey of industries to determine status of health education.
  - (c) Analysis of a smaller sample of establishments where impeding or facilitating factors seem to be working.
  - (d) Field experiments to test methods of overcoming resistance to health programs.
  - (e) Comparisons of specific establishments where cooperative relationships between labor and management do and do not exist.
3. *Effectiveness of Methods and Techniques*
- (a) All media need to be studied in relation to applicable criteria and factors. Interrelationships of the different criteria and factors also need to be considered.
  - (b) Studies should be made of the relative effectiveness of the media or techniques as applied to the same or comparable groups. Also combinations of media and techniques should be tested.
  - (c) All media and techniques should be studied as to their effectiveness in various groups with different characteristics.
  - (d) Materials and methods should be developed for a particular situation, appraisals being applied in their planning and development; then their effectiveness should be compared with that of existing materials in the same situation.
  - (e) Studies should be made to develop methods for evaluating effectiveness of methods and techniques in areas lacking any evaluation process.

4. *Relation of Health Education to Health-Service Programs and Impact on Worker Health*

- (a) Comparison of groups of workers (1) with both a health education program and a health service program, (2) with a health service program alone, (3) with a health education program alone, (4) without either program.
- (b) A study of the effect of adding a health education program to established health services.
- (c) Comparison of the effect of various kinds of health service programs on the effectiveness of a formal health education program.
- (d) Demonstrations and case studies of formal health education programs for workers to explore—
  - (1) group planning and learning.
  - (2) integration with community health education programs.
  - (3) relationships with health service programs.